Service Manual

Nokia Display Products Oy
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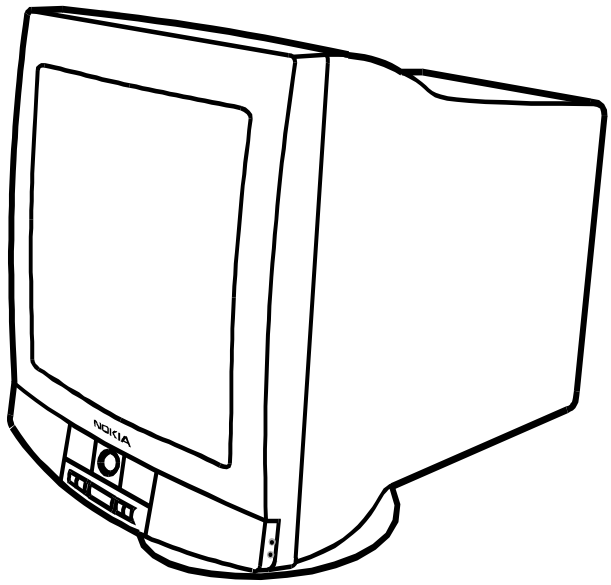
Chassis 445P

21” High Resolution color Monitor



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Monitor Dismantling
Part List
PCB Part List
PCB Layout pictures

Level 1

Main Board module SMA172
CRT module SMH132
Video amplifier module ... SMY031
Control module SMZ040

When re–ordering manuals, please quote the model name and part number.

ZB1557
07.96

Service

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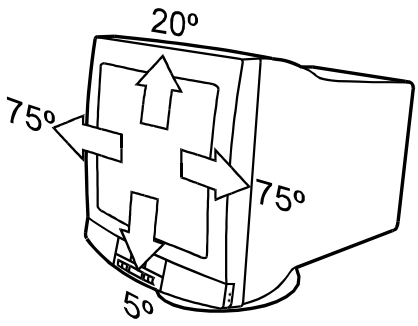
1. Product Overview

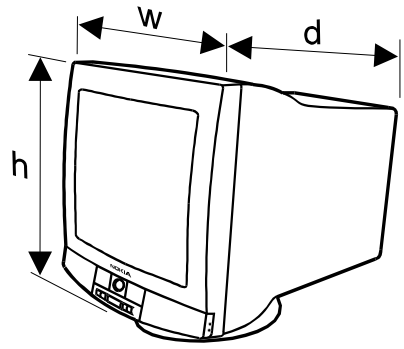
445P is a 21 inch monitor with optional videocamera and sound reproducing feature. The maximum resolution of 1600 x 1280 makes the monitor suitable for PC applications using graphical user interfaces. The monitor has an own power supply with input voltage requirements from 90V to 264V.

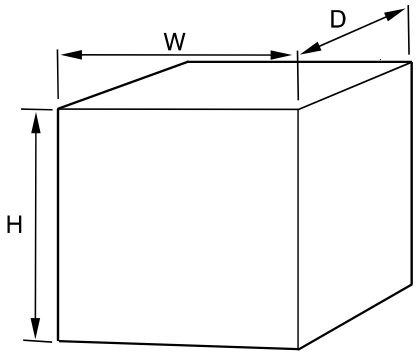
1.1. Technical Specifications

Cathode Ray Tube	21" in diagonal, 90° deflection angle Dark, non−glare, antistatic coating Short persistence (P22) Dot pitch 0.28 mm
Picture Size	387 mm x 290 mm with specified geometric distortion
Maximum Picture Size	400 mm x 300 mm, diagonally 500 mm (19.7")
Power Input Requirements	Voltage 90−264 V, 50/60 Hz Autosense Current 2.0 A/110 V, 1.0 A/240 V
Power Dissipation	< 160 W Normal Operation ∼70 W Stand−by < 30 W Suspend < 5 W Auto power off
Memory Locations	14 for factory preset timings 18 for user adjusted timings
Geometric Distortion	The distance between bezel and active screen edge shall not vary more than 2 mm in both vertical and horizontal dimensions
Luminance	Min. 70 cdm^{-2} at center, with full white field
Video Input	Input Signal: RGB, analog, positive, max 0.7 V/75 Ω Horizontal addressability: 1600 dots maximum Vertical addressability: 1280 dots maximum
Synchronization Range	Horizontal: 30 kHz to 102 kHz automatic Vertical: 50 Hz to 150 Hz automatic
Synchronization Signal	Separate TTL, positive/negative Composite TTL, positive/negative Composite, on green 0.3 Vpp negative
Max. Dot Frequency Capability	>200 MHz
Temperature	Operating: +10°C to +40°C Packed: −20°C to +60°C
Humidity	Operating: 15% to 85 % Packed: 5% to 95 %
Weight	31 kg net 36 kg gross

Size, Tilt and Swivel



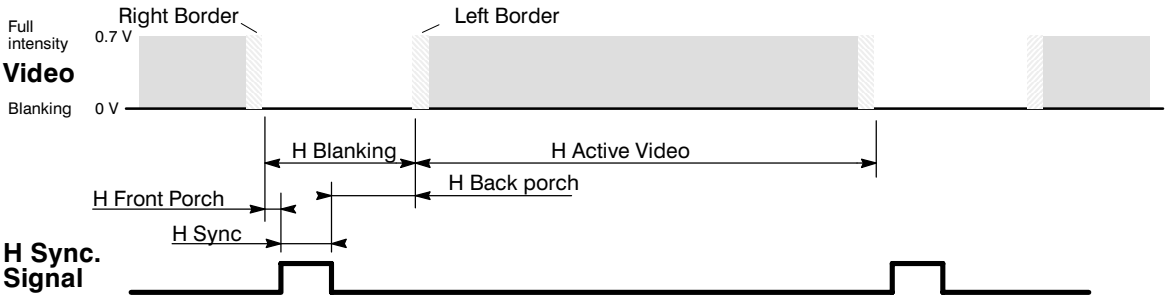


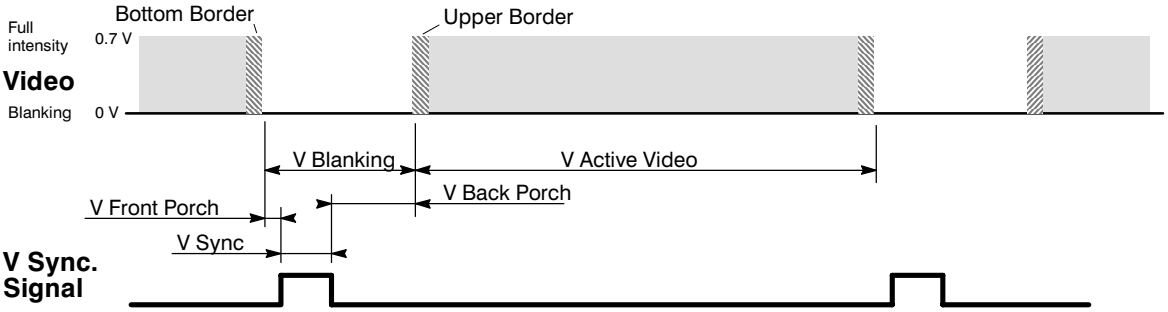


Dimensions

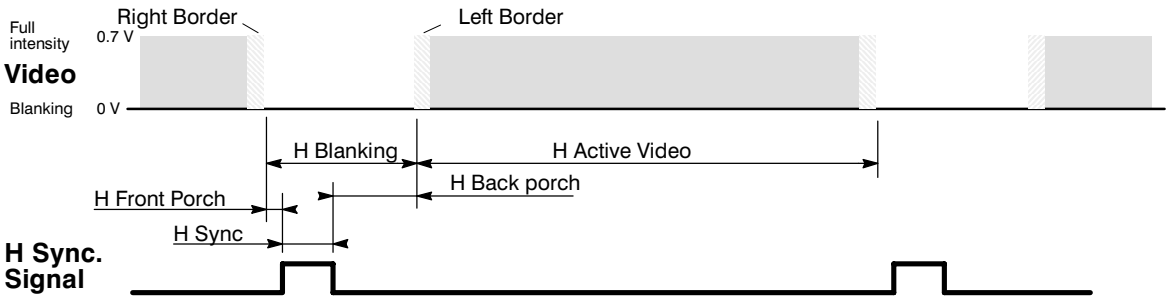
Monitor	h	518 mm
	w	530 mm
	d	555 mm
Package	H	670 mm
	W	670 mm
	D	740 mm

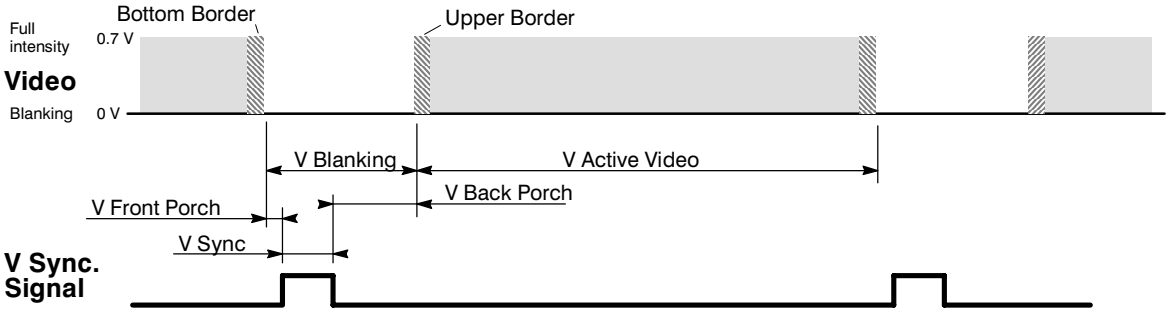
1.2. Preset Display Modes





Display Mode –>	1	2	3	4	5	6	7
Display Mode Name	NCE605	NCE200D	NCE201D	NCE300	NCE306	NCE307	NCE406
H Frequency/kHz	79.976	31.467	44.544	31.472	37.500	53.966	46.875
H Period/µs	12.504	31.780	22.450	31.774	26.667	18.530	21.333
H Active Video/µs	9.481	31.780	16.036	25.420	20.317	14.254	16.162
H Resolution	1280	720	720	640	640	640	800
H Sync/µs	1.062	3.814	2.405	3.81	2.032	1.425	1.616
H Back Porch/µs	1.043	1.907	2.405	1.91	3.810	2.138	3.232
V Period/Lines	1066	449	513	525	500	539	625
V Resolution	1024	400	400	480	480	480	600
V Sync/Lines	3	2	12	2	3	4	3
V Back Porch/ Lines	38	34	61	33	16	38	21
H sync Polarity	+	–	–	–	–	–	+
V sync Polarity	+	+	+	–	–	–	+
H Front Porch/µs	0.12	0.64	1.60	0.64	0.51	0.71	0.32
V Front Porch/ Lines	1	13	40	10	1	17	1
Dot Frequency/ MHz	135.640	56.640	89.800	25.177	31.500	44.900	49.500
Interlacing	no	no	no	no	no	no	no



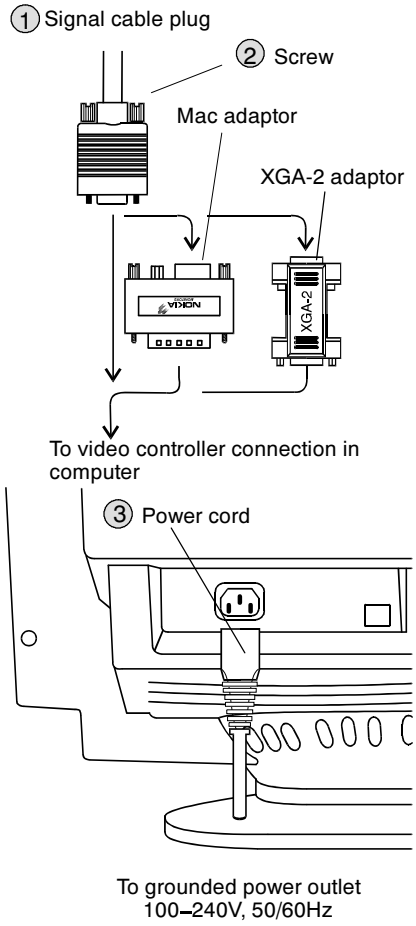


Display Mode –>	8	9	10	11	12	13	14
Display Mode Name	NCE409	NCE506	NCE510	NCE60Y	NCE60X	NCE700	NCE70X
H Frequency/kHz	66.603	60.023	63.812	91.146	96.846	74.995	93.755
H Period/µs	15.014	16.660	15.671	10.971	10.326	13.334	10.666
H Active Video/µs	11.461	13.003	11.082	8.127	7.793	9.877	7.901
H Resolution	800	1024	1024	1280	1280	1600	1600
H Sync/µs	1.146	1.22	1.126	1.016	1.072	1.185	0.948
H Back Porch/µs	1.719	2.23	2.165	1.422	1.272	1.883	1.501
V Period/Lines	666	800	886	1072	1076	1250	1250
V Resolution	600	768	768	1024	1024	1200	1200
V Sync/Lines	4	3	4	3	3	3	3
V Back Porch/ Lines	43	28	64	44	48	46	46
H sync Polarity	+	+	+	+	+	+	+
V sync Polarity	+	+	+	+	+	+	+
H Front Porch/µs	0.69	0.20	1.30	0.41	0.19	0.39	0.32
V Front Porch/ Lines	19	1	50	1	1	1	1
Dot Frequency/ MHz	69.800	78.750	92.400	157.500	164.250	161.990	202.510
Interlacing	no	no	no	no	no	no	no

1.3. Monitor Connection

Make sure that the monitor is disconnected from mains and the power switches of the computer and all attached devices are turned off before connecting the monitor.

1. Connect the signal cable plug to the videocontroller con nector at the back of the computer.
2. Tighten the screws on the plug by hand.
3. Connect the power cord first to the monitor and then to a grounded power outlet.



If your monitor is DDC compatible (PC)

– Do not use any adapter when connecting signal cable to your computer.
– Do not extend the signal cable with extension lead. The DDC signals will not accept extended cable.

If there is no DDC in your computer (PC)

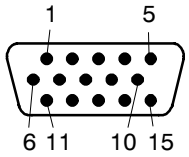
– Normally there is no need for adaptor when connecting sig nal cable to your computer.
– Use a XGA–2 adaptor in the signal cable if you are going to use XGA–2 display mode (1024 x 768, 75 Hz)
– Use MAC adaptor in signal cable when connecting the monitor to an Apple Macintosh computer.

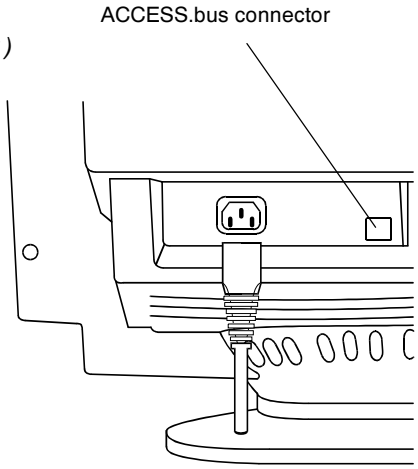
ACCESS.bus connector

The monitor has been equipped with ACCESS.bus connector in the connector panel. You may plug other DDC level 2AB compatible equipments (e.g. mouse) there.

Signal connector

Pin		*Signal*	
1	–>	*RV*	*Red video*
2	–>	*GV*	*Green video*
3	–>	*BV*	*Blue video*
4	<–	*ID2*	*ID2 (tied to LG with 332 ohms inside monitor)*
5		*ST*	*DDC GND*
6		*RG*	*Red ground*
7		*GG*	*Green ground*
8		*BG*	*Blue ground*
9	–>		*+ 5V*
10		*LG*	*Logic ground*
11	<–	*ID0*	*ID0 (tied to LG with 332 ohms inside monitor)*
12	<–	*SDA*	*DDC SDA*
13	–>	*Hs*	*Hor. sync., Comp. sync.*
14	–>	*Vs*	*Vert. sync.*
15	<–	*SCL*	*DDC SCL*





ACCESS.bus

Pin	*Signal*
1	*Ground*
2	*DDC SDA (I^2 C signal)*
3	*+ 5V*
4	*DDC SCL (I^2 C signal)*

1.4. Audio Features Option

The Monitor has built–in basic audio features. In business and multimedia systems this is an advantage because external speakers, microphone and connection do not clutter your desktop.

Before making any connections, switch off the computer and monitor with the power switch.

As an example the illustration shows connection to a computer sound board (Sound Blaster, Creative Labs, Inc.) Note that other types of sound boards may use different names for connectors.
The monitor can be connected to any other sound system if the signal levels and impedances are taken into account.

Incoming sound

The incoming sound system is capable to procedure stereo sound via loudspeaker L and R.
In the right hand side of the monitor there is a jack for headphones. Inserting of the headphones plug silences the loudspeakers.
Connect the audio inputs Audio IN L/R of the monitor to the audio output (Line Out) in the computer.

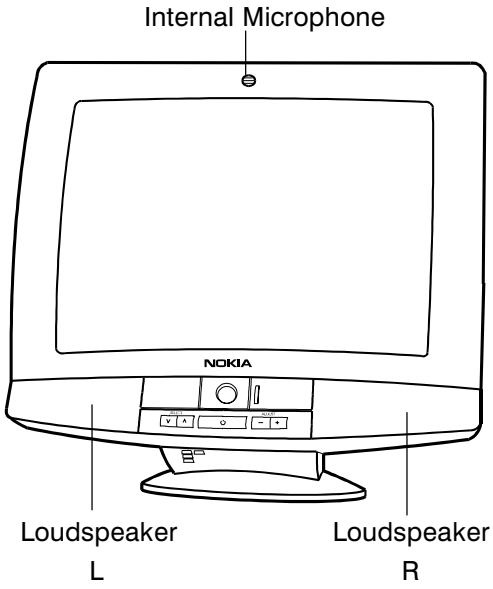
Outgoing sound

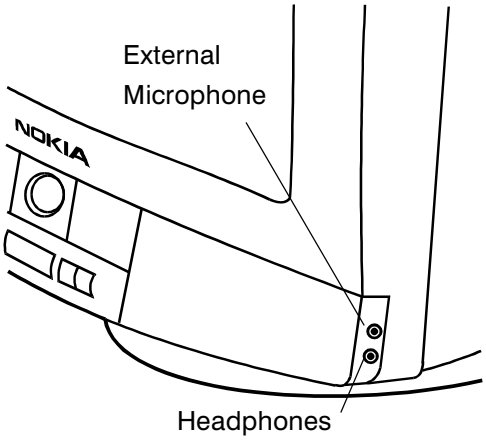
The monitor has built–in microphone.
If you use external microphone (electret condenser mic), plug it into the jack on the right hand side of the monitor. Inserting of the microphone plug switches off the internal microphone.

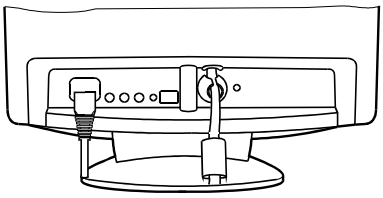
Connect the microphone output Microphone OUT of the monitor to the line level sound input (Line IN) in the computer. If the Line In jack is occupied, try microphone input jack (Mic in).

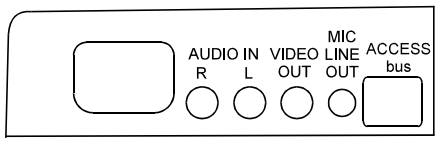
Note

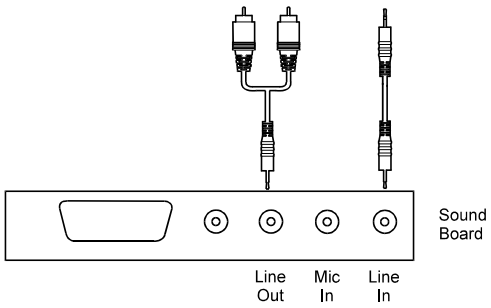
Sound Board, headphones, external microphone and-connection cables are not part of monitor delivery even in case the monitor includes audio features.











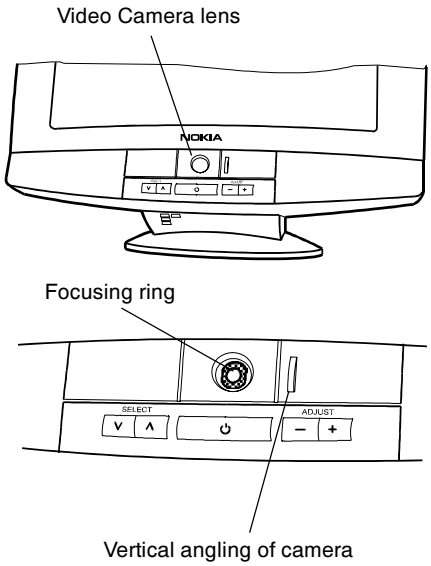
1.5. Video Camera Option

Video camera offers PAL composite signal which can be used e.g. for

- Video conference together with audio features.
- Video recording with ordinary video recorder.
- Signal source for computer video capture card in case the card accepts composite signal.

The camera objective can be closed with lever operated lid. The lid is intended to operate as a shield for objective when the camera is not in use. When closed it gives a possibility for the user to be absolute privacy without danger of somebody watching you.

The camera can be angled towards the object horizontally by swivelling the monitor in its base and vertically by a lever under the bezel.

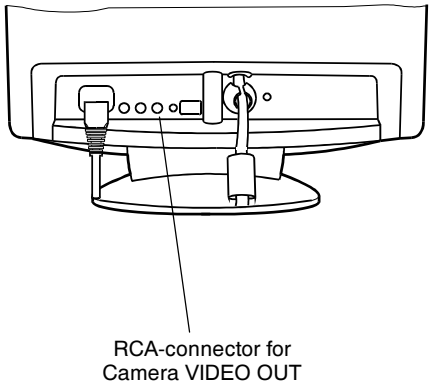


1.5.1. Connections

Adjust focus with help of a TV–set equipment with a SCART connector

Nokia Parts cable set P/N 81V029 can be used for connection to the TV–set but if not available, build your own cable.

1. Attach the SCART connector to the TV–set.
2. Attach the Video IN RCA connector to the Monitor Camera VIDEO OUT
3. Adjust focus.

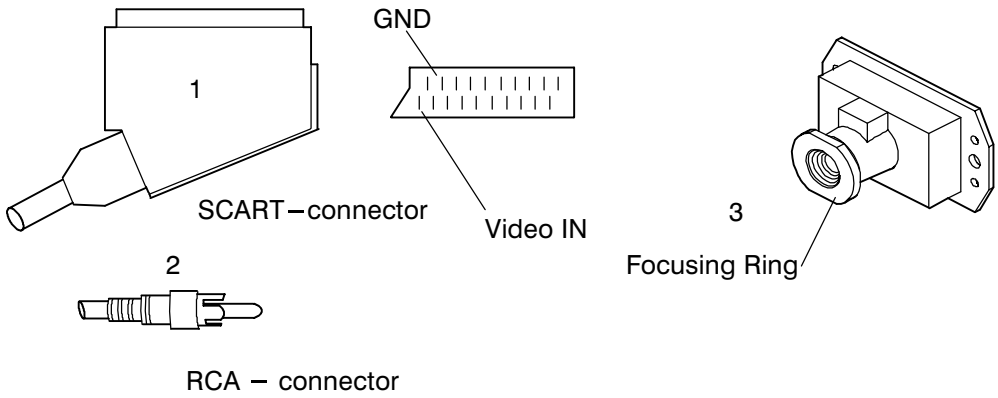


1.5.2. Focusing Camera

The camera can be focused to the target by turning the focusing ring (black) with fingertip.

- Turning the ring clockwise gives a sharp picture from targets which are farther.
- Turning the ring counterclockwise focuses the camera to the targets which are near.

If you can not find a position with good focus, turn the focus ring clockwise to the limit. Turn the ring 4 turns backwards.



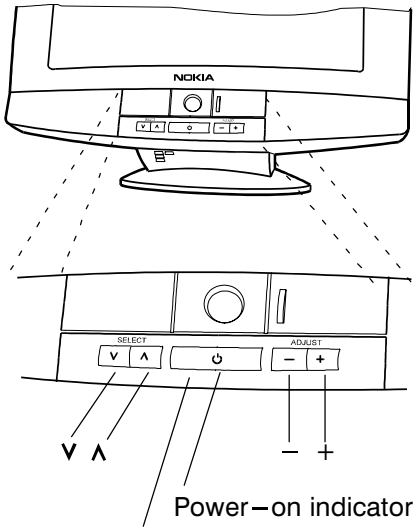
1.6.User Controls

1.6.1. Power Switch

Turning the Monitor ON and OFF

Push the **power switch** to turn the monitor on or off

When the power is turned on, the **power–on indicator** will light.
The colour of the the power–on light indicates the operating state of the monitor.



Green . . . . . The monitor is in normal operation

Orange . . . . . The monitor is in automatic power off state

Not illuminated . . The monitor is turned off with power switch or disconnected from mains outlet.

If the power management function working properly in your computer, you do not need to switch the monitor on or off. It happens automatically.

The power switch does not disconnect the monitor from mains. In oder to make the monitor completely powerless, unplug the power cord from power outlet.

1.6.2. Main Menu

The adjustments and settings of the monitor are carried out using menu display. The menu is called on the screen by pushing \/ or /\ button.

Each line in the MAIN MENU contains a header of another menu. Footer line contains information about the display mode currently in use. Nothing can be adjusted directly in this menu.

MAIN MENU
LANGUAGE
BASIC ADJUSTMENTS
GEOMETRY
IMAGE
1024 x 768 75 Hz

1.7.Menu

Basic Adjustments

The BASIC ADJUSTMENTS menu contains the most useful adjustments.

① The menu is called to the screen by pushing the ⓥ or ⓐ button.

② Select the property you want to adjust with ⓥ or ⓐ (e.g. WIDTH). The selected item in the menu is indicated with triangles ” and A.

③ Adjust the selected property (WIDTH) with + or −. The menu disappears and a scale shows the position of the adjustment. The + button increases and − button decreases the property.

After adjusting, the new setting will be stored automatically.

Some of the menu items consist of selection alternatives. + scans the alternatives upwards and − downwards. If there are only two alternatives, + button switches the property ON and − button OFF.

All menu displays disappear automatically in a few seconds or at once by pushing ⓥ and ⓐ simultaneously.

Default Item

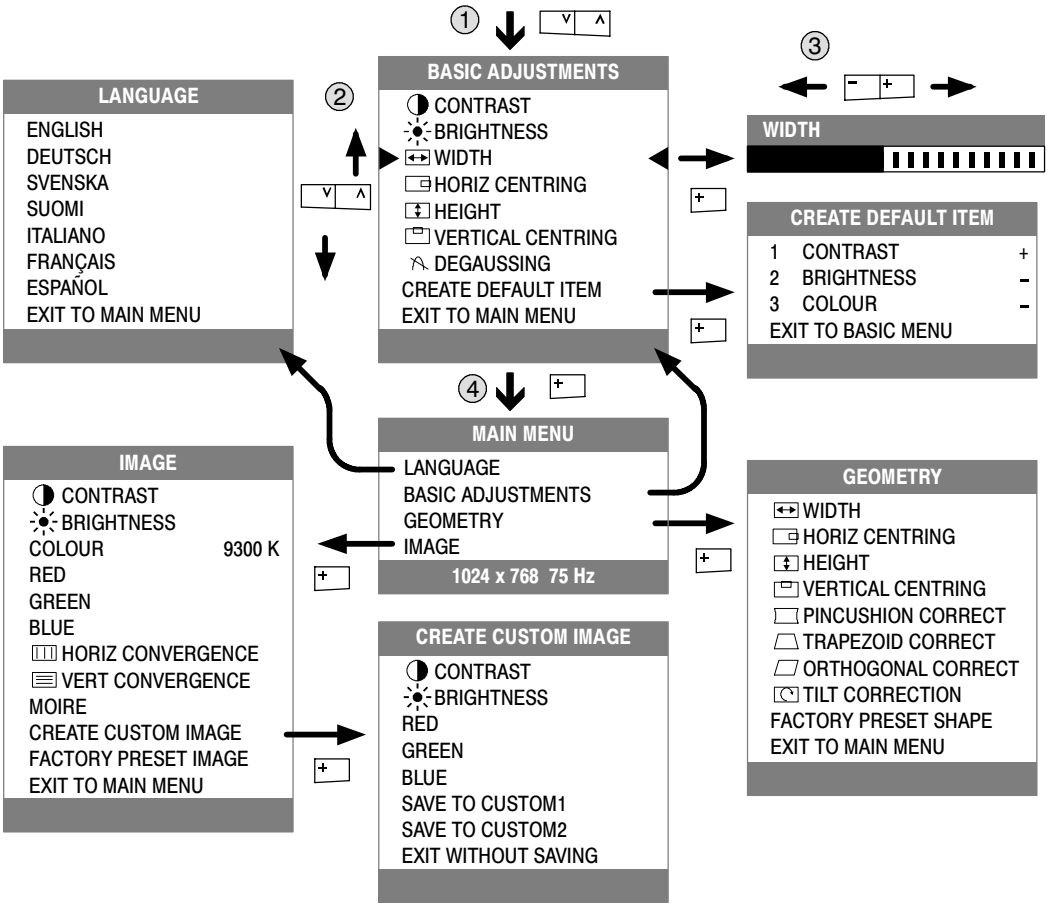
The menu selection is in force 20 seconds after the menu has disappeared. During that time the latest item can be called to the screen simply by pushing + or − . After the time has expired the menu selection returns to the default item.

Main Menu

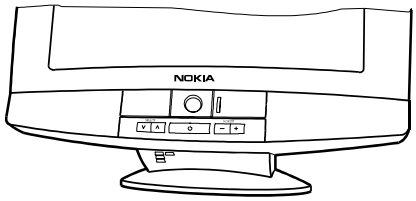
④ If you want to adjust other properties in the main menu, push ⓥ or ⓐ and select EXIT TO MAIN MENU. Returning takes place when you push +.

Select with ⓥ or ⓐ the header which contains the adjustment you are looking for.

Open the selected submenu with+ button.



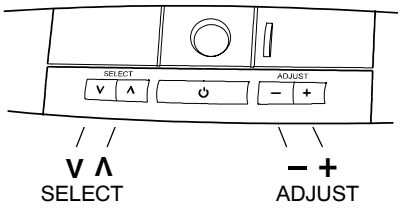
1.8. Audio Menu



Volume and Balance

VOLUME adjusts the sound intensity of the loudspeakers and headphones.

BALANCE adjusts the relation of sound volume in the right speaker to that in the left speaker.



Bass and Treble

Low and high frequencies can be boosted or atteunated separately by 10 decibels.

Mono/Stereo/Pseudo stereo/Spatial stereo

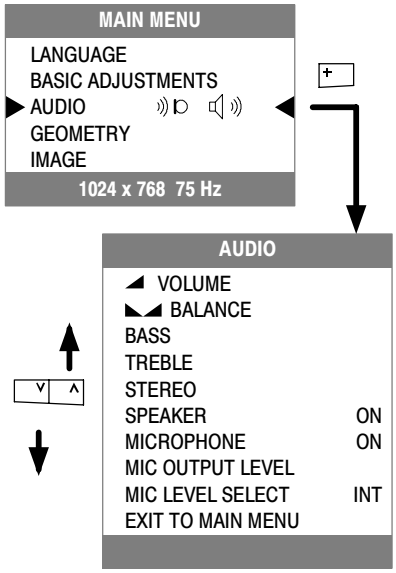
This menu item has four alternatives.

MONO forces the sound reproduction to mono whether the incoming signal is mono or stereo.

STEREO allows for stereo reproduction.

PSEUDO STEREO makes a mono signal sound like stereo.

SPATIAL STEREO emphasises the differences in information between R and L channels. This makes the stereo sound wider.



Speaker on/off

SPEAKER OFF silences the loudspeakers and headphones. Sound can be restored by switching SPEAKER ON or increasing VOLUME.

Microphone on/off

MICROPHONE OFF switches the outgoing sound signal (Microphone LINE OUT) off. MICROPHONE ON restores the signal.

Mic Output Level

MIC OUTPUT LEVEL adjusts the level of the outgoing (Microphone LINE OUT) sound signal.

Mic Level Select internal/external

If you continuously use the internal or external microphone only, you do not need to make any MIC LEVEL SELECT settings.

If you use internal and external microphones alternately and they have different sensitivities you may need this feature.

- Select first MIC LEVEL SELECT INT
- Adjust the level of the outgoing sound with MIC OUTPUT LEVEL.
- Install the external microphone or headset.
- Select MIC LEVEL SELECT EXT
- Adjust the level of the outgoing sound with MIC OUTPUT LEVEL equal to that with internal microphone.

Now if you change back to the internal microphone, you get the correct output level by setting MIC LEVEL SELECT from EXT to INT and vice versa.

2. Site Preparation

2.1. Location

This Monitor is designed for normal office conditions. It is equipped with own power supply. It is not to be serviced or repaired on site

2.2. Troubleshooting

Local service facilities should perform simple maintenance such as trimming. More advanced maintenance and repair that requires replacement of components which in turn requires testing and re-trimming should be carried out in a central workshop.

Symptom		**Measures**
Picture screen is blank	The indicator on the front panel is not illuminated	Check that the power cord is correctly connected to the monitor and to the power outlet. If the monitor is powered through the computer, check that the computer is switched on with the mains switch. Use a desk light, for example, to verify that current is connected to a power outlet. If no electricity is connected to the outlet, call an electrician.
		Unplug the monitor from power outlet for about one minute.
	The indicator on the front panel is illuminated	The monitor might be in stand−by position. Push one of the buttons or move the mouse.
		Check that the keyboard's connection to the computer is OK.
		Check that the signal cable connector is connected. If the connector is loose, tighten the connector's screws.
		Unplug the monitor from power outlet for about one minute.
		Switch off the monitor and the computer. Remove the signal cable from the computer. Switch on the monitor using the power switch. If a gray, slightly blinking frame (background) appears on the screen, it is evident that the monitor functions correctly and the problem is caused by an error in other parts of the system.
		Check the signal cable's connection pins. If the pins are slightly distorted, use nose pliers to straighten them.
		The computer may use a timing values which are out of the monitor's synchronization range.
Picture has colour defects		Demagnetize the monitor
		If colour defect is repeated without the monitor having been moved, it is possible that the monitor is influenced by a strong magnetic interference field (near to a high power cable, for example). Try to find a better location for the monitor or the interference source. Note that another monitor placed too near (less than 30 cm.) may also generate interference in the picture.
Picture is stable but distorted		Your computer may use a timing for which the corresponding picture characteristic adjustments have not been set at the factory. Adjust the picture characteristics
Picture is unstable		Make sure your computer and video card are properly configured for your monitor
		Check the proximity of other electrical devices that generate magnetic fields, such as speakers, other monitors, electric fans and fluorescent light fixtures.
Picture is black and white		Check that the signal cable's connector is completely inserted. Switch off the computer and restart.

2.3. Checking the Operation of PowerSaver

The proper operation of the function requires a computer with VESA DPMS power management capabilities. Note that the power saving feature must be activated in the computer when checking the operation.

State	Colour of the power−on indicator	5V	7V	12V	Video
Normal Operation	Green	Yes	Yes	Yes	Yes
Stand−by	Green	Yes	Yes	Yes	No
Suspend	Green	Yes	Yes	No	No
Power Off	Orange	Yes	No	No	No

DPMS (Display Power Management Signaling) is a trade mark of Video Electronics Standard Association (VESA)

3. Controlling the Memory for Picture Adjustments

The picture adjustment values are stored in non-volatile memory. The memory has separated areas for User Adjustments and for Factory Adjustments.

3.1. Memory for User Adjustments

3.1.1. Adjustment

[1] If there are values available in the memory for user adjustments, corresponding to the present timing signals, they are always used.

[2] New user made adjustments are stored to the memory for user adjustments.

3.1.2. Resetting the User made settings for geometry or image

[3] User memory can be emptied from user made settings. **Resetting affects only the timing which is currently active**. The reset function is inhibited if no corresponding factory preset display mode exists. Please refer to chapter “User controls”.

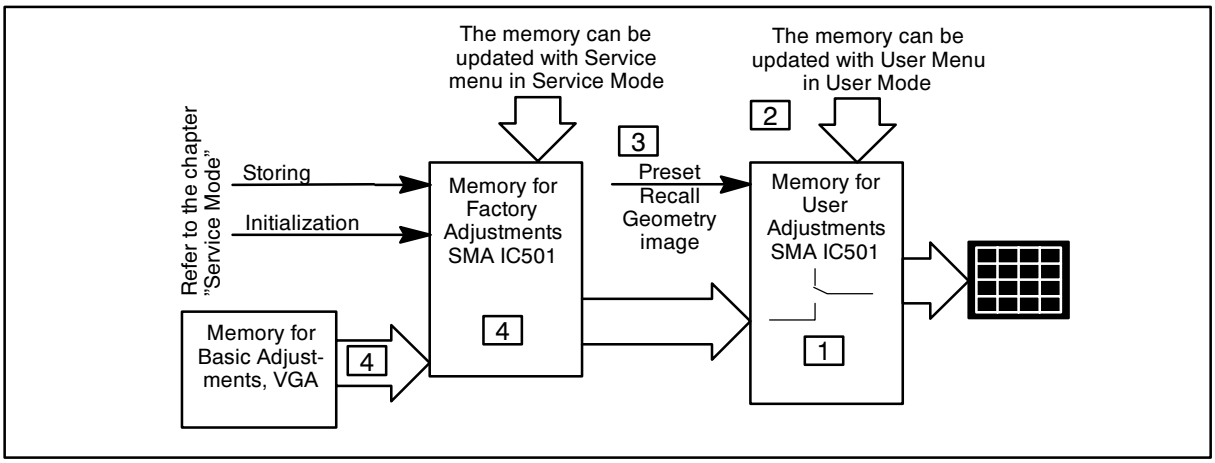
After resetting all picture properties are coming from memory for factory adjustments.

3.2. Memory for Factory Adjustments

3.2.1. Adjustment

[4] Factory adjustments can be updated with service menu in service mode. If there is no location in factory adjustment memory for timings currently in use, the adjustment affects the memory for user adjustments.

– If the memory location mentioned in case [1] is empty, the picture adjustment values are read from memory for factory adjustments. Factory adjustments, corresponding to the current timings, are transferred to user memory if any picture property is adjusted. After that the operation is as in case [1].



4. Service Mode

Service Mode is needed for updating of the factory adjustments for timings listed in the chapter Preset Display Modes. If there is no location in factory adjustment memory for display mode currently in use, the adjustment affects the memory for user adjustments.

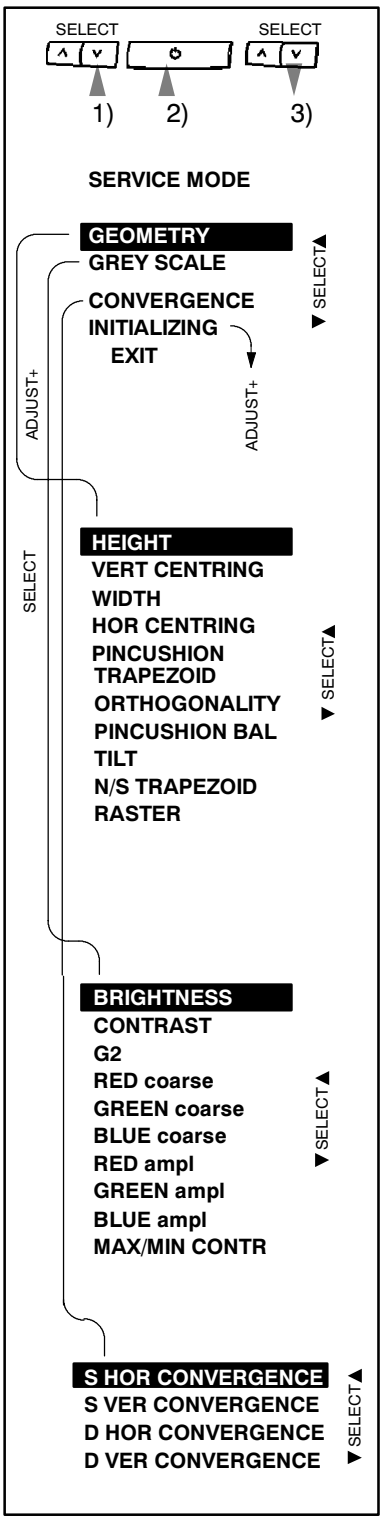
4.1. Grouping of the Adjustments

There are three groups of software adjustments in service mode:
- geometry adjustment set
- grey scale adjustment set
- convergence adjustment set

The following table shows how the adjustments act in relation to the display modes.

Adjustment	Common for all Display modes	Separate for each Display mode	Available in User Mode	Available in Service Mode
Contrast	X		X (Common memory for both modes)	
Brightness	X		X (Common memory for both modes)	
Horizontal centring		X	X	X
Vertical centring		X	X	X
Height		X	X	X
Width		X	X	X
Pincushion		X	X	X
Trapezium		X	X	X
Orthogonality		X	X	X
Horizontal convergence	X		X	X
Vertical convergence	X		X	X
Moire	X		X	
Pincushion balance		X		X
Horizontal raster centring	X			X
Tilt	X		X	X
G2	X			X
Max/Min contrast	X			X
R Blacklevel	X			X
G Blacklevel	X			X
B Blacklevel	X			X
R Gain	X			X
G Gain	X			X
B Gain	X			X

Common adjustments need to be adjusted only once. Separate adjustment must be performed for every display mode to be stored.



4.2. Service Menu

4.2.1. Access to Service Mode

First switch OFF the monitor with power switch.
1) Push Ⓥ down
2) While keeping Ⓥ down, switch ON the monitor
3) Release Ⓥ **after service menu has appeared** to the screen.

Versions up to 1.13

First switch OFF the monitor with power switch.
1) Push Ⓥ down
2) While keeping Ⓥ down, switch ON the monitor
3) During 0,5 s release Ⓥ and push Ⓐ down.
4) Release Ⓐ **after service menu has appeared** to the screen.

Select the items in the menu with button. Push **+** to open Geometry or Grey Scale Submenu or to Initialize the memory IC. Adjust each property with **+ −** .

4.2.2. Geometry

Geometry submenu contains placement, size and shape adjustments.

4.2.3. Grey Scale

This monitor has six preset tints. With tint numbers smaller than 4 the picture becomes reddish and with tint numbers greater than 4 the picture turns blue.

Tint no	1	2	3	4	5	6	7
Colour Temperature	5000K	6000K	6500K	7000K	8000K	9300K	10000K

The grey scale adjustment affects directly tint number 6 (9300K) only. Other tints are derived automatically from 9300K colour temperature.

4.2.4. Initializing the Replacement IC501 on SMA board

If the memory for factory adjustments is replaced, it must be initialized. During initializing all memory locations are written with approximate values. They must be updated in service mode as explained in the chapter 'Adjustment Procedure'.

- Activate service mode as explained before.
- Select INITIALIZING in the service mode menu.
- Initialize of the memory by pushing **+**.
- Switch OFF the monitor

Caution
Initializing of a programmed memory IC deletes all user and factory made adjustments.

4.2.5. Monitor Type setting

- After initializing the monitor continue with the setting of the monitor version of the memory.
- Switch the monitor off.

Audio
- Push + down
- While keeping + down switch ON the monitor
- During 0,5 s release + and push − down
- Release − after service menu has appeared to the screen

Non Audio
- Push − down
- While keeping − down switch ON the monitor
- During 0,5 s release − and push + down
- Release + after service menu has appeared to the screen

4.2.6. Storing the mode related adjustments

1. Return to the SERVICE MODE menu
2. Wait for five seconds and select a new display mode.

Caution

Make all adjustments at a time. If you return afterwards to the display mode, which you have already done, you have to adjust it totally again.

4.2.7. Exit from service mode

1. Return to the SERVICE MODE menu
2. Wait for five seconds and select a new display mode.
3. Switch off the monitor
4. Wait for one minute before switching on the monitor.

5. Workshop Maintenance

5.1. Important Safety Notice

The components, which are important for safety, are marked with special mark ⚠ on the circuit diagram. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X−radiation, shock, fire or other hazards.

For your own safety, use always safety isolating transformer when repairing the monitor.

5.1.1. Discharging the CRT

High voltage circuitry includes bleeder resistor which normally discharges the tube in about 5 seconds after the power is switched off. If you − for safety reasons − want to be sure about the discharging, do as follows:

Wear safety goggles. A cracked CRT may implode when discharged.
The signal cable must be disconnected from the computer.

To discharge the CRT, a flat−head screwdriver with grounding cable is required.

- Disconnect the power cable.
- Connect the metal chassis of the monitor to reliable earth.
- Connect the grounding wire to the screwdriver.
- Connect the other end of the grounding wire to the chassis (earth).
- Insert the screwdriver under the rubber cap of the EHT connector to discharge the tube.
- Disconnect the power cable.

5.2. ESD−Sensitive Parts

To prevent damage, when working with electrostatic discharge (ESD) sensitive parts, observe the following instructions:

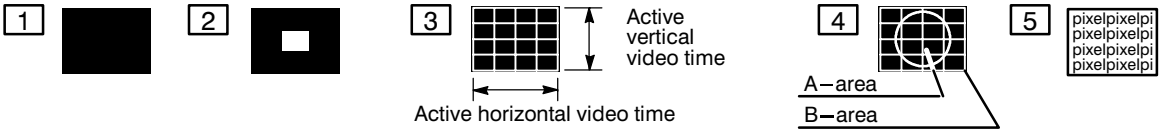
- Keep the ESD−sensitive part in its original shipping container until you are ready to install the part into the component card.
- Just before touching the ESD−sensitive part, discharge to the monitor any static electricity in your body; do this by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when inserting or removing a logic card, for example.
- Hold the ESD−sensitive part by its edge; do not touch its pins.

5.3. Test Equipment

The following test equipment are required to adjustment procedure.

- Safety isolating transformer
- Digital multimeter: Fluke 87 or equivalent true RMS multimeter
- High voltage probe: e.g. Fluke 80−40k
- Signal generator: VTG220 + PC or programmable video generator
- Color analyzer: e.g. Minolta TV Color Analyzer CA100
- Convergence Gauge (CM7AR or equivalent)
- Oscilloscope 40−100 MHz band width
- Hi−Pot tester (Flash tester with insulation measurement / Leakage current / Break down voltage)
- ESD protection necessary

5.4. Test Patterns



1 Black Picture
- Signal level = 0 V at each RGB input

2 Highlight grey scale tracking
- Signal level = 700 mV in the window at each RGB input

3 Crosshatch Picture
- Squares e.g. 20 mm x 20 mm
- Outmost lines correspond the active vertical/horizontal video time

4 Convergence test pattern

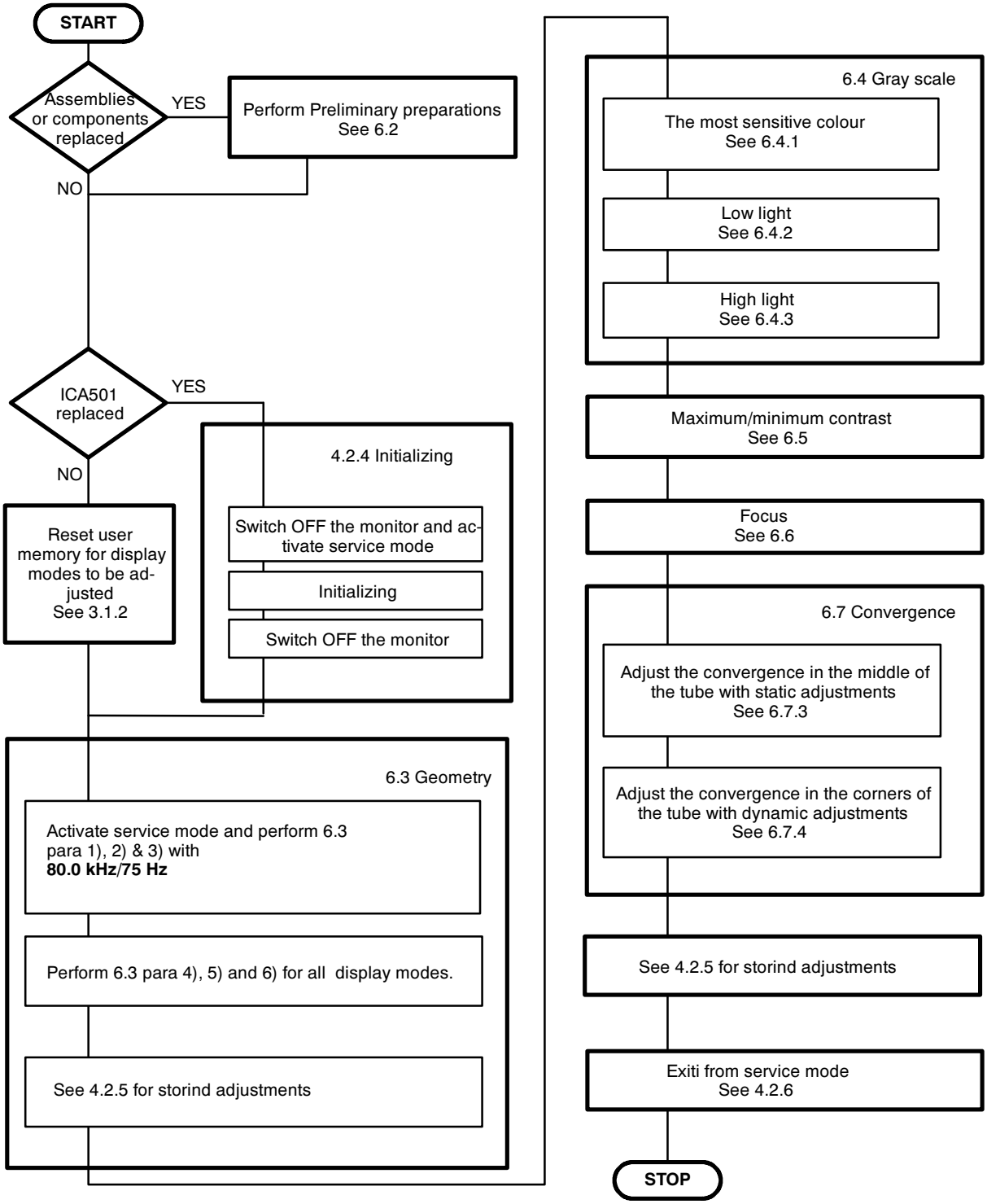
5 Focus test pattern

6. Adjustment Procedure

The following procedure must be carried out in case of large service operations e.g. when a circuit board or nonvolatile memory ICA501 has been replaced by a new one.

The order of adjustments explained here has been found to produce the desired result with the minimum of effort. Adjustments can also be made in another order or completely separately.

6.1. Adjustment Flow Diagram

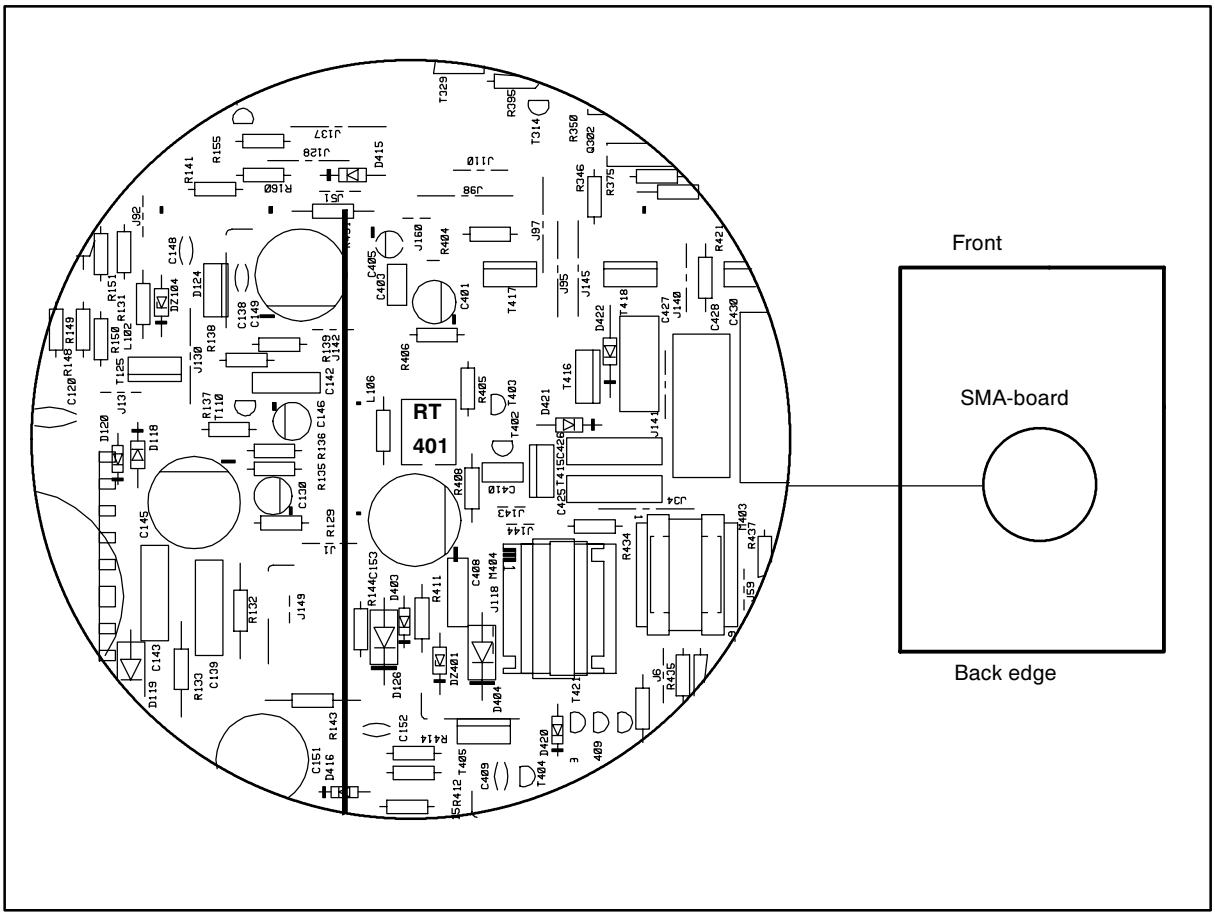

START
Assemblies or components replaced
YES
Perform Preliminary preparations See 6.2
NO
ICA501 replaced
YES
NO
Reset user memory for display modes to be adjusted See 3.1.2
4.2.4 Initializing
Switch OFF the monitor and activate service mode
Initializing
Switch OFF the monitor
6.3 Geometry
Activate service mode and perform 6.3 para 1), 2) & 3) with 80.0 kHz/75 Hz
Perform 6.3 para 4), 5) and 6) for all display modes.
See 4.2.5 for storind adjustments
6.4 Gray scale
The most sensitive colour See 6.4.1
Low light See 6.4.2
High light See 6.4.3
Maximum/minimum contrast See 6.5
Focus See 6.6
6.7 Convergence
Adjust the convergence in the middle of the tube with static adjustments See 6.7.3
Adjust the convergence in the corners of the tube with dynamic adjustments See 6.7.4
See 4.2.5 for storind adjustments
Exiti from service mode See 4.2.6
STOP

6.2. Preliminary Preparations

Connect the signal cable to the PC. Switch on the monitor and the PC. Let the monitor warm up for 20 minutes before starting the adjustments.

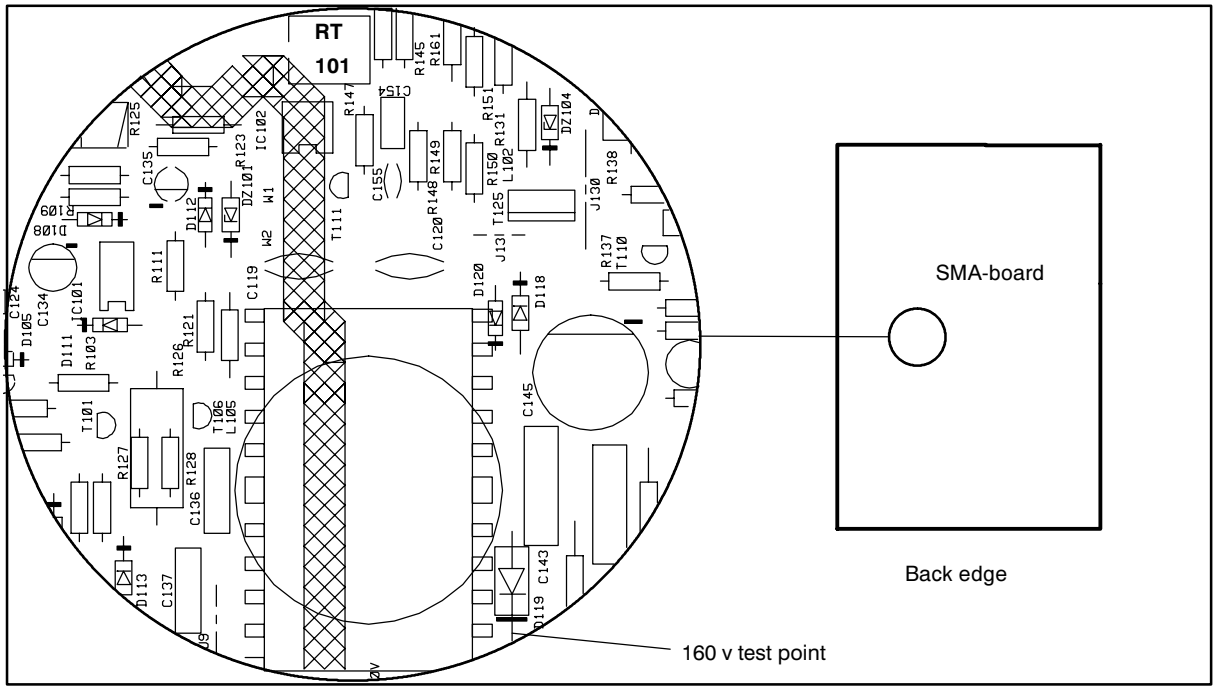
6.2.1. Coarse width

- Select 80 kHz/75 Hz crosshatch test pattern
- Set width to the maximum with menu adjustment
- Set width approximately 387 mm with coarse adjustment **RT401**



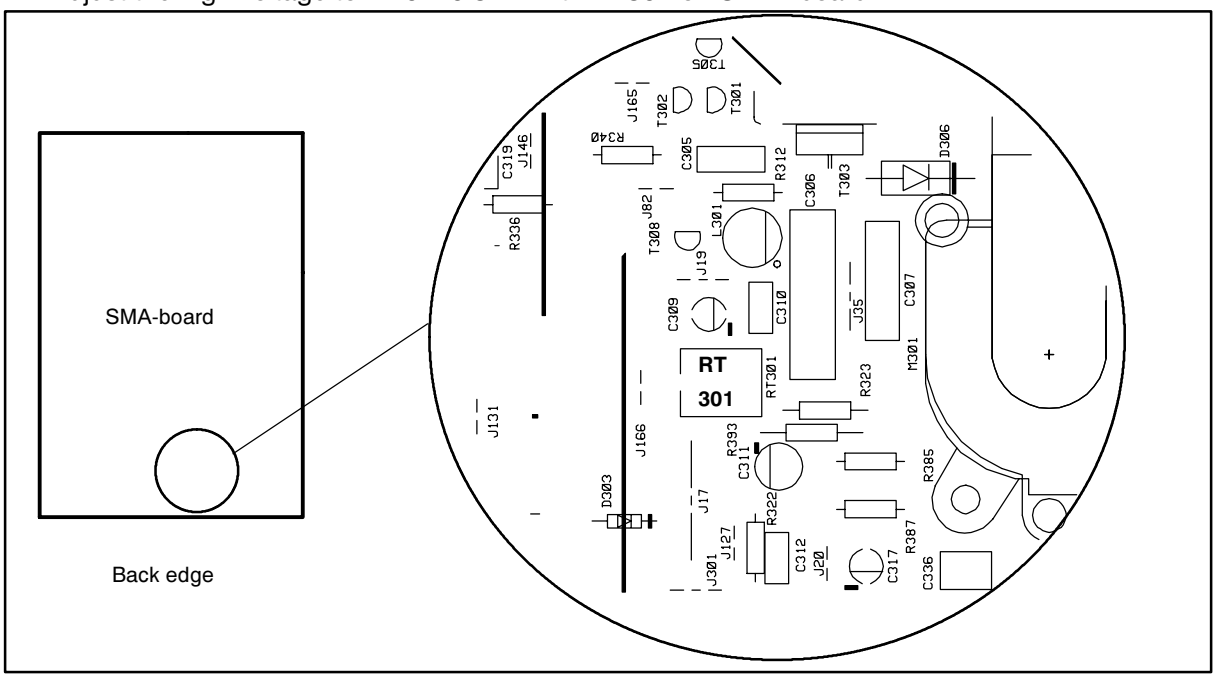
6.2.2. Operating voltage

Connect the DVM to 160 v test point. Adjust trimmer **RT101** on SMA –board for a voltage of **160 ± 0.5 V.**



6.2.3. High Voltage

– Select 31.47kHz/60Hz crosshatch test pattern.
– Connect the high voltage meter to the anode of the picture tube.
– Adjust the high voltage to **27.0 ±0.3 kV** with **RT301** on SMA–board.



6.2.4. Preliminary Picture Adjustments

1) Select 80.0 kHz/75 Hz crosshatch test pattern.
2) Set ◑ to maximum and adjust ☼ until the background is faintly visible.
3) Adjust focus if poor.

Remember

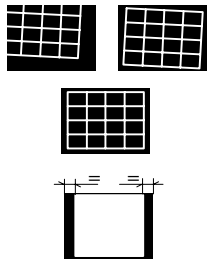
– Do not adjust **G2**–voltage with potentiometer or keypanel if you have reason to belive that there is no need to adjust gray scale.

6.3. Geometry

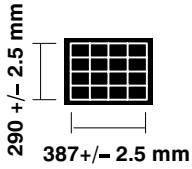
Activate Service Mode.

Degaussing must be carried out before the picture adjustments. Degaussing shall be repeated if the monitor is moved.

1) Select **80 kHz**/**75 Hz** crosshatch test pattern.
   Set ◑ to maximum and adjust ☼ until the background is faintly visible.
   Reduce width until both vertical edges of the **background** are visible.
2) Straighten the picture if tilted.
   This adjustment is common for all display modes.
3) Centre the background.
   This adjustment is common for all display modes.

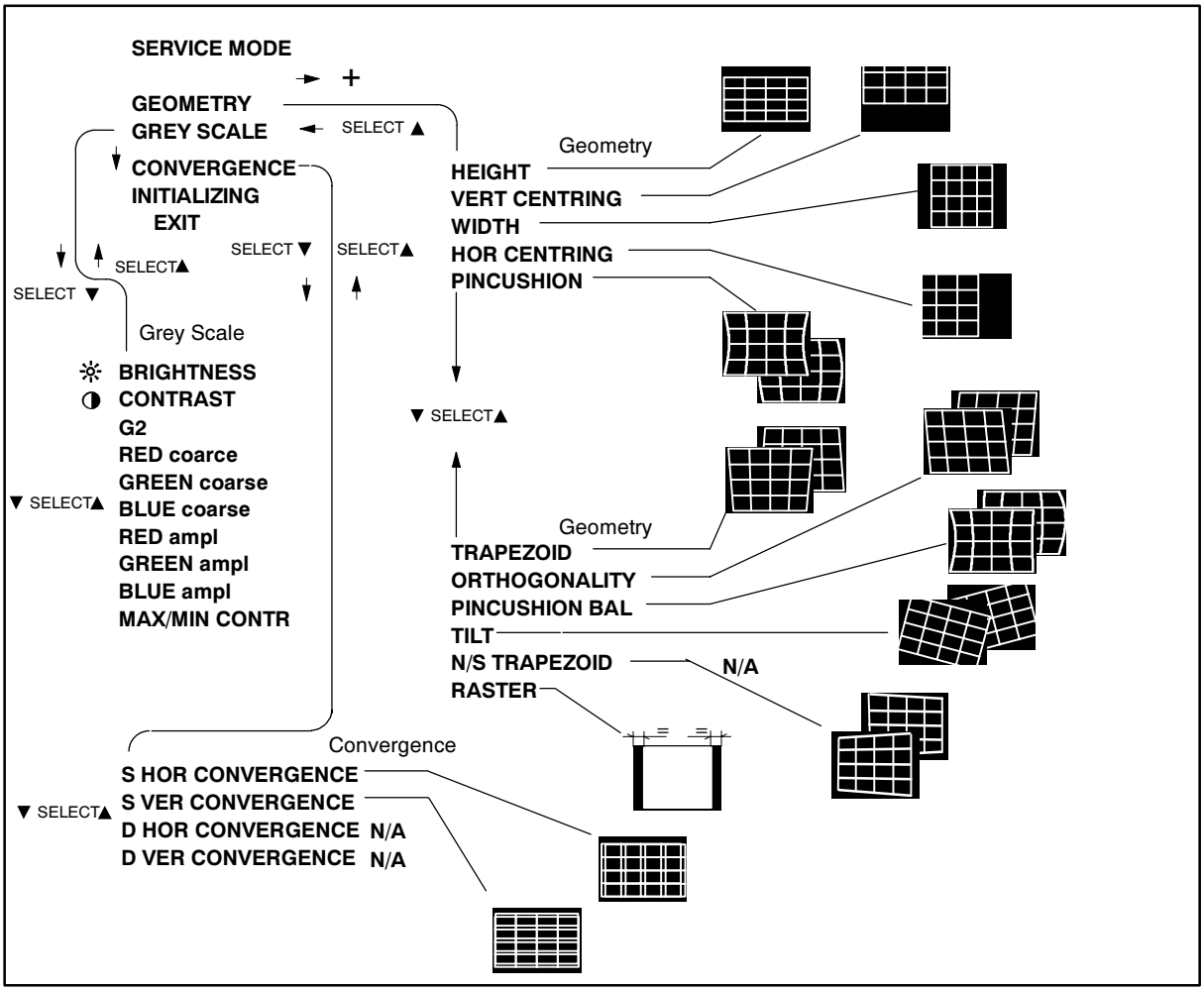


4) Adjust size, position and shape of the picture equal to the mask aperture Adjust first the properties with largest deviation from the correct value.
5) Adjust final width and height.



6) Return to the main menu and wait for five seconds.

7) Repeat steps 4) , 5) and 6) for every display mode to be stored. Note that the display mode can be changed without leaving the service mode.



6.4. Grey Scale

The grey scale is adjusted for 9300K colour temperature. Memorizing of G2 and Max/Min Contrast takes place in five seconds when you return to the main menu from submenu.

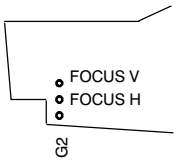
6.4.1. The Most Sensitive Colour

The most sensitive colour has been marked in a label on the deflection yoke. It may not be correct if tube or SMH card has been changed. In that case judge the most sensitive colour from the tone of the picture after you have made the following adjustments.

1) Select **80 kHz/75 Hz** black test pattern.
2) Set ☼ and ◑ to maximum.
3) Set blacklevel adjustment **RED/GREEN/BLUE coarse** to minimum (for darkest picture)
4) Set **RED/GREEN/BLUE ampl** menu adjustments to center
5) Set **G2 menu** adjustment to center
6) Place the probe of the colour analyzer in the middle of the screen and adjust with **G2 trimmer** until the picture brightness to 5±1 nit.

6.4.2. Low Light

1) Select **80 kHz/75 Hz** black test pattern.
2) Adjust picture brightness to 5±0.8 nits with **G2 menu** adjustment.
3) Adjust with ☼ adjustment the brightness to 2±0.5 nits.
4) Adjust the colour coordinates to (9300K)
   x = 0.281±0.020
   y = 0.311±0.020
   with **RED/GREEN/BLUE coarse** adjustments.
   Do not adjust the most sensitive colour.
5) Set ☼ and ◑ to the maximum and check that the brightness is still 8±0.8 nits. If not, repeat steps 3) and 4).



Left side view of the chassis

6.4.3. High Light

1) Select **80 kHz/75 Hz** black test pattern.
2) Adjust with ☼ the picture brightness to 2±0.5 nits.
3) Select 80 kHz/75 Hz window test pattern.
4) Adjust with ◑ the picture brightness in the window to 70±5 nits.
5) Adjust with **RED/GREEN/BLUE ampl** the colour coordinates in the window to
   x = 0.281±0.020
   y = 0.311±0.020
   Check after adjustment that the brightness reading is in limits.
6) Check 6.4.2 para 3) and 4). Readjust color temperature if out of tolerance.

6.5. Maximum/Minimum Contrast

1) Set ◑ to the maximum.
2) Adjust with ☼ the picture brightness outside window to 2±0.5 nits.
3) Adjust brightness in the window to 150±3 nits with **MAX/MIN CONTR**.
4) Set ◑ to minimum.
5) Adjust brightness to 16±1 nits with **MAX/MIN CONTR**.
6) Return to the main menu and wait for five secods.
7) Exit from service mode.

6.6. Focus

1) Select **80 kHz/75 Hz** crosshatch test pattern
2) Set ◑ to the maximum and adjust ☼ until the background is faintly visible
3) Adjust the sharpness with **FOCUS H** and **FOCUS V** to optimum
4) Adjust ☼ until the background is invisible
5) Select focus test pattern. Check that all letters are clearly visible

6.7. Convergence

Reduce first the convergence error in the middle of the screen to minimum using static adjustments. After the convergence is faultless in the middle of the tube, use dynamic adjustments to eliminate the error in the edges of the tube.

Static adjustments affects the whole picture area:

– magnet ring set on the tube neck (horizontal + vertical)

Dynamic adjustments affects a part of the picture area:

– deflection yoke trimmers.

6.7.1. Measuring Conditions

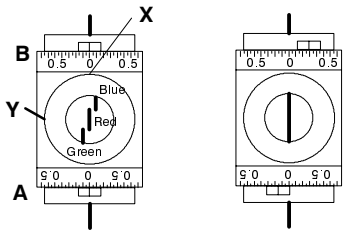
– Adjust convergence with 80.0 kHz line frequency
– Make sure that focus is correctly set at the mid-point between the screen center and the edge of the picture.
– Use white crosshatch test pattern with circle.
– Adjust ◑ to near the maximum and reduce ☼ until the background disappears.

6.7.2. Convergence Measuring Gauge CM7AR

The use of the Klein CM7AR Convergence Gauge has been explained here but other types of gauges can be used as well.

Check that the adjusting knobs (A & B) are set to zero.

- Place the gauge on the line with marking **Y up** upwards when measuring horizontal line.
- Place the gauge on the line with marking **X up** upwards when measuring vertical line.
- If the line has convergence error, the line in the window seems to be broken.
- Use knobs A and B to adjust the line continuous.
- If the readings are on the opposite side of zero, the convergence error is A+B (e.g. 0.2 + 0.1 = 0.3).
- If the readings are on the same side of zero, the convergence error is equal to A if A > B or B if B > A

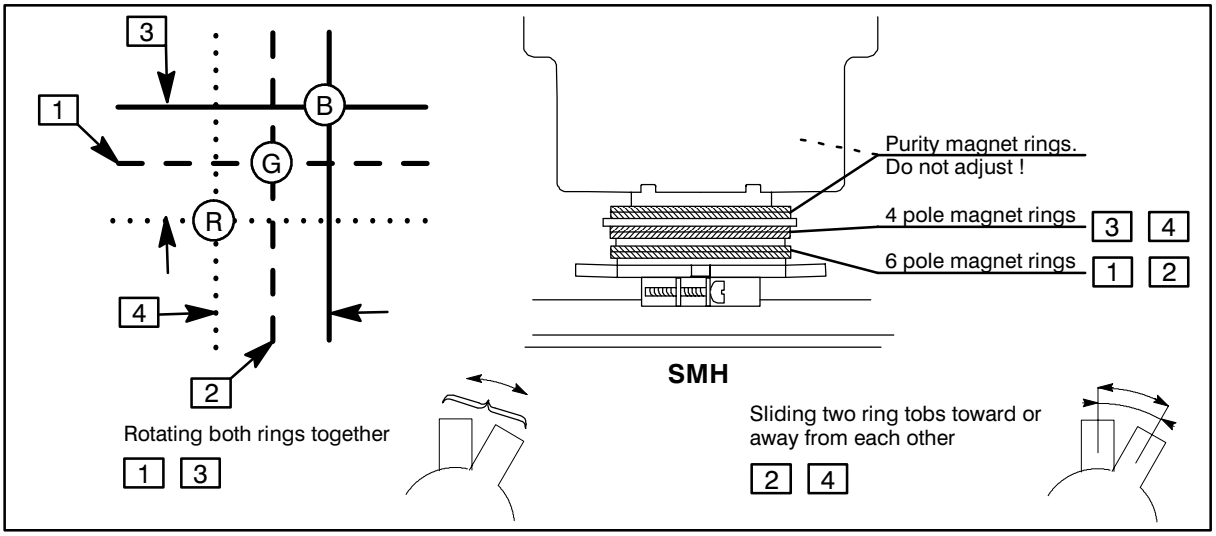


6.7.3. Static Convergence

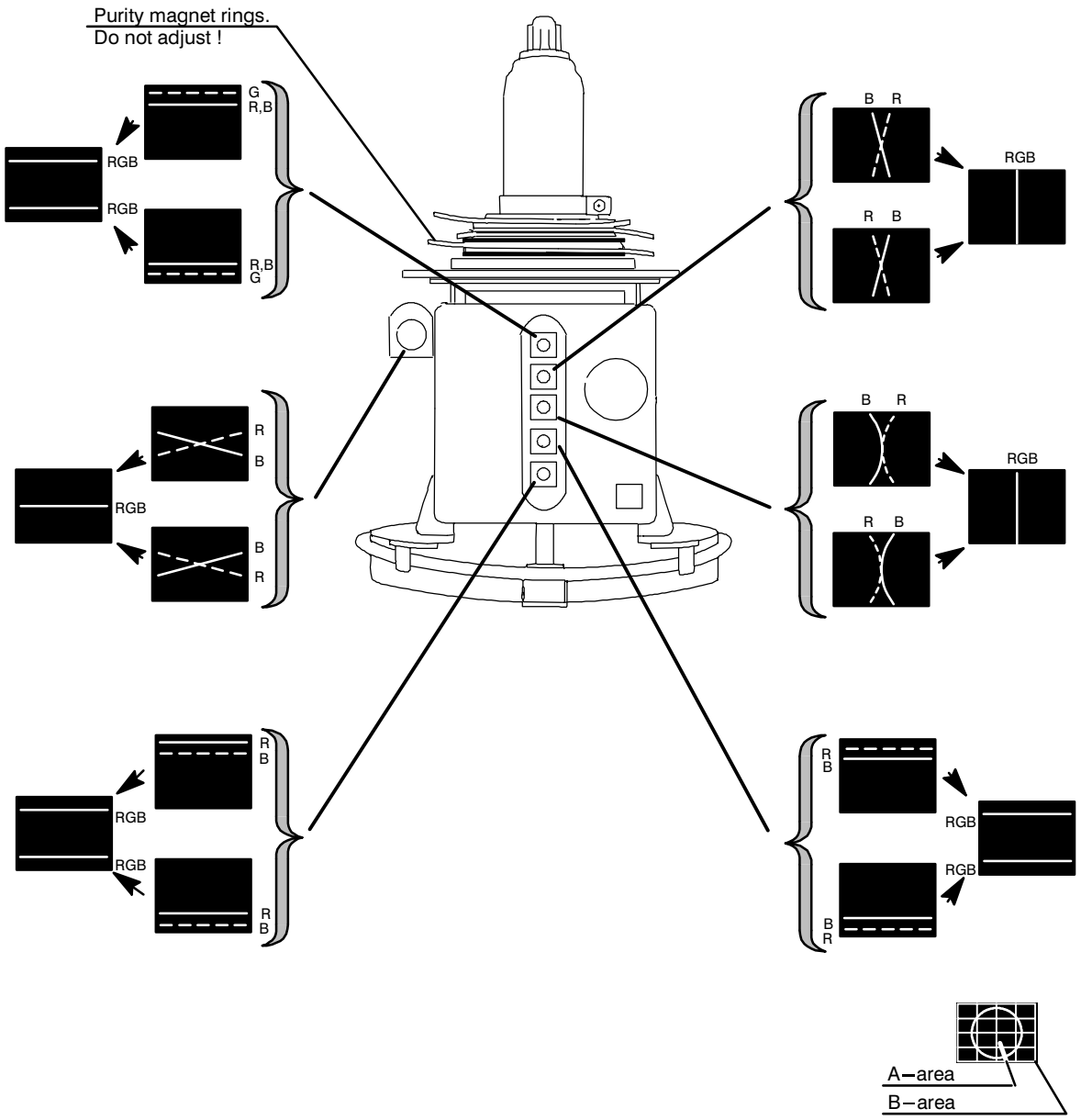
The magnet rings has been set to the optimum in the factory. Readjustment is necessary only in case the adjusting magnets have been accidentally moved.

1 Adjust G vertically in the middle between R and B with 6 pole magnet rings.
2 Adjust G horizontally in the middle between R and B with 6 pole magnet rings.
3 Adjust R and B vertically to the same position with G line with 4 pole magnet rings
4 Adjust R and B horizontally to the same position with G line with 4 pole magnet rings

Lock the rings with paint



6.7.4 Dynamic Convergence



6.7.5 Allowed Error Levels for Convergence

For horizontal sync frequencies above 58 kHz

Area A: ≤0.3 mm

Area B: ≤0.4 mm

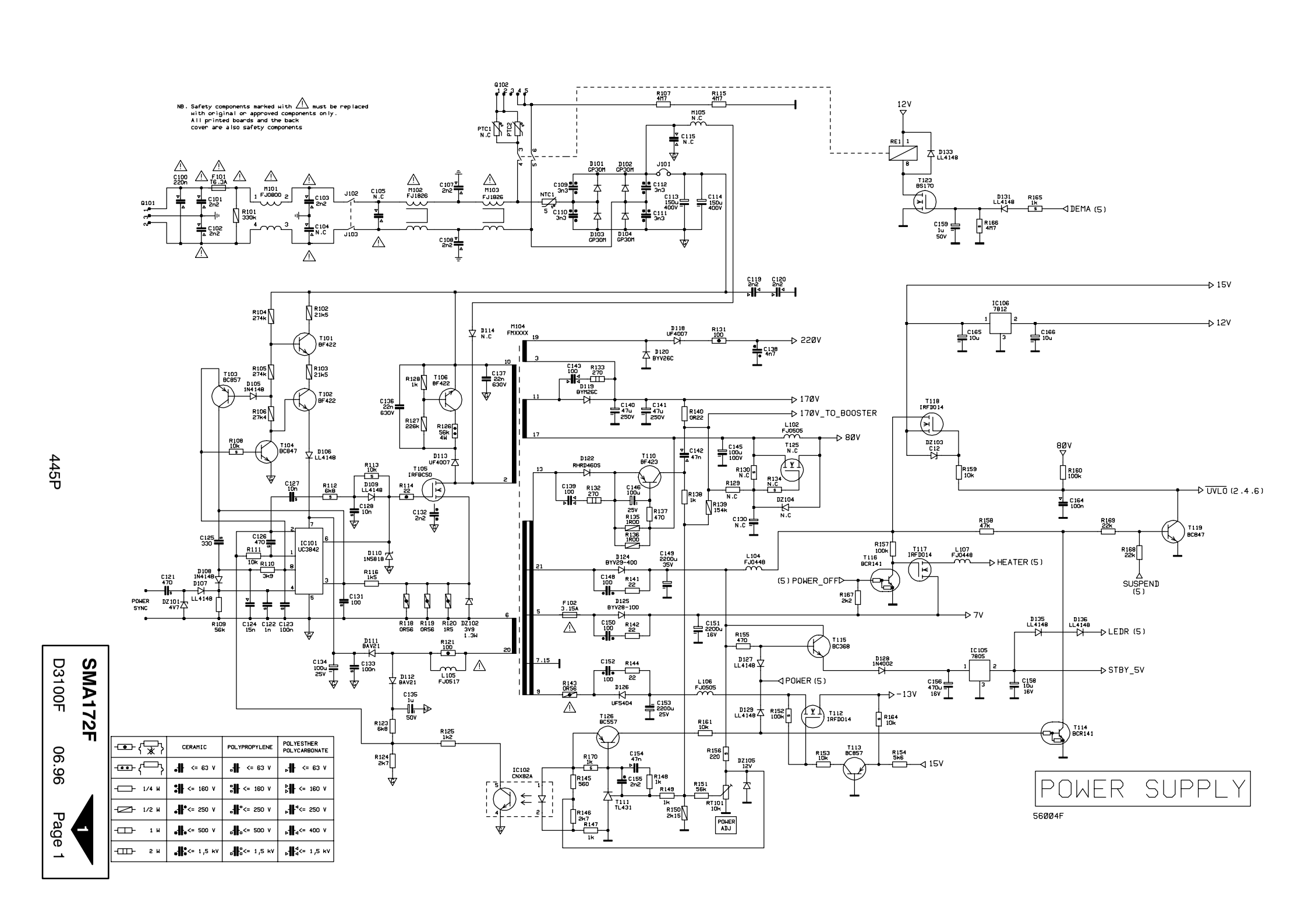
For horizontal sync frequencies below 58 kHz

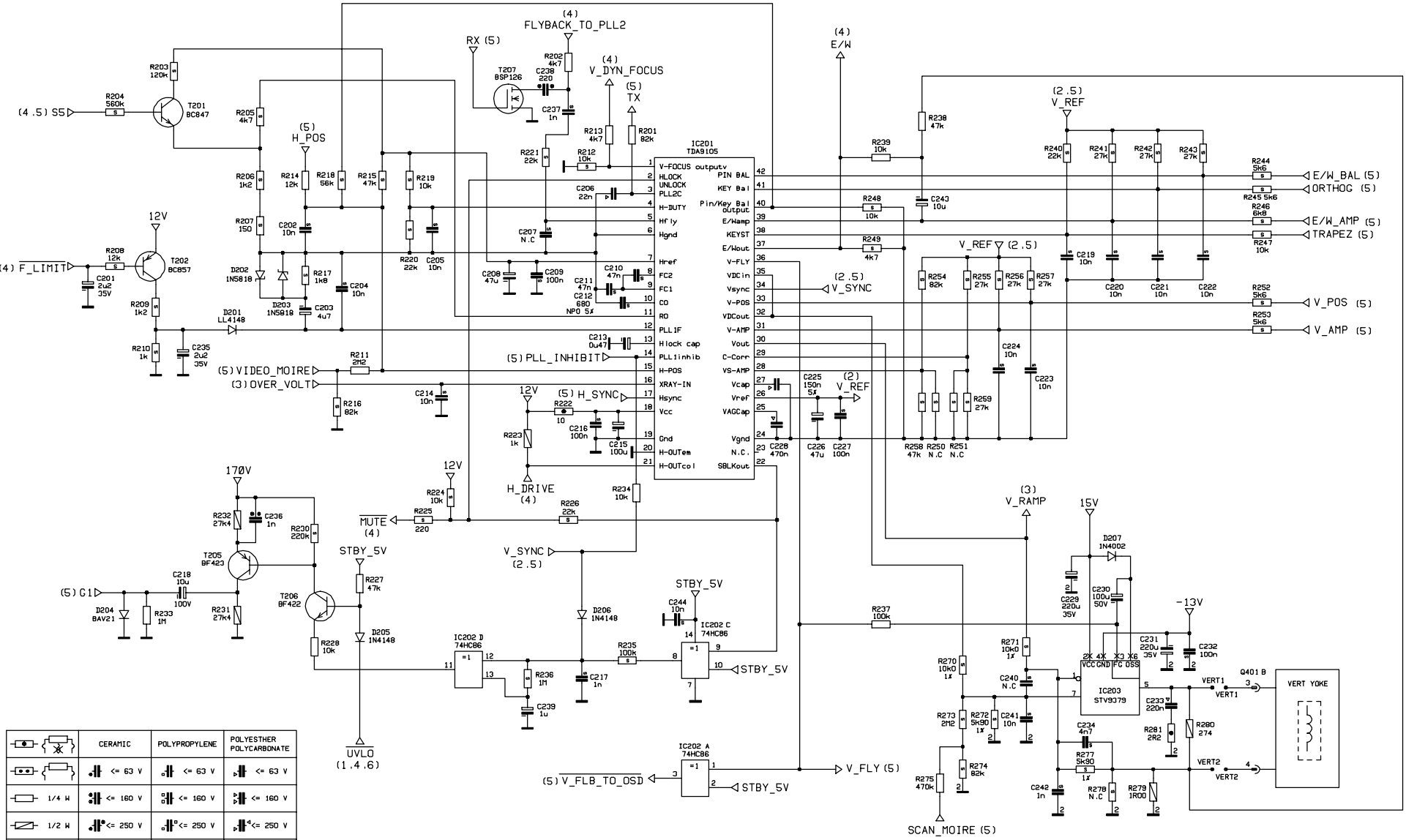
Area A: ≤0.4 mm

Area B: ≤0.5 mm

6.8. Colour Purity

Do not move purity magnet rings. If the purity magnet rings are found to have moved during transportation or handling, set them just in the original position by tracing the locking paint put on purity magnet rings and holder of beam bender and then readjust the static convergence.


NB. Safety components marked with ⚠ must be replaced with original or approved components only. All printed boards and the back cover are also safety components
POWER SUPPLY
56004F
SMA172F
D3100F 06.96 Page 1
445P
CERAMIC
POLYPROPYLENE
POLYESTHER POLYCARBONATE
220V
170V
170V_TO_BOOSTER
80V
15V
12V
7V
-13V
HEATER (5)
POWER_OFF (5)
SUSPEND (5)
LEDR (5)
STBY_5V
POWER (5)
DEMA (5)
UVLO (2,4,6)
POWER SYNC
IC101 UC3842
IC102 CNX82A
IC105 7805
IC106 7812
TL431
POWER ADJ



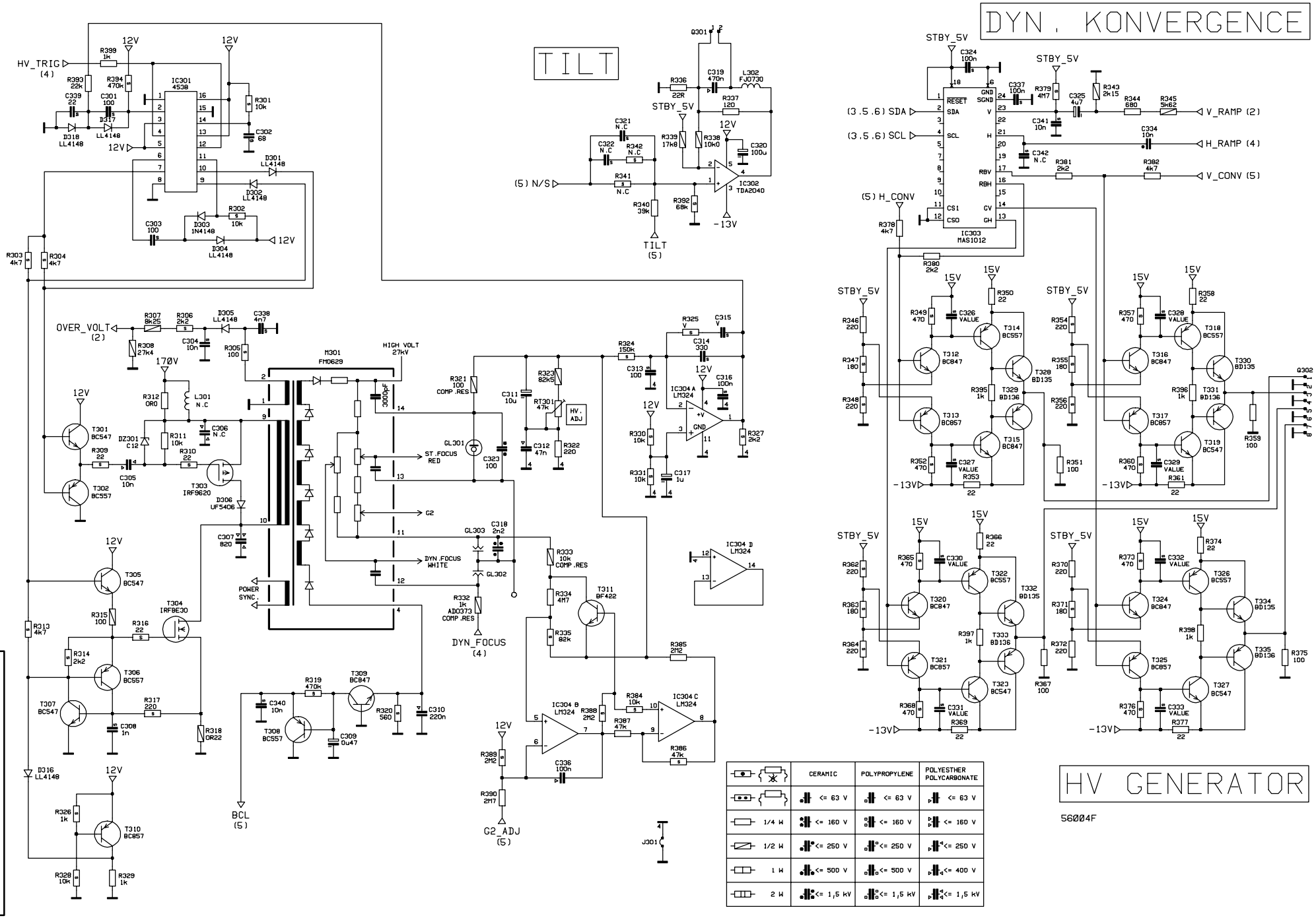
	CERAMIC	POLYPROPYLENE	POLYESTHER POLYCARBONATE
	<= 63 V	<= 63 V	<= 63 V
1/4 W	<= 160 V	<= 160 V	<= 160 V
1/2 W	<= 250 V	<= 250 V	<= 250 V
1 W	<= 500 V	<= 500 V	<= 400 V
2 W	<= 1,5 kV	<= 1,5 kV	<= 1,5 kV

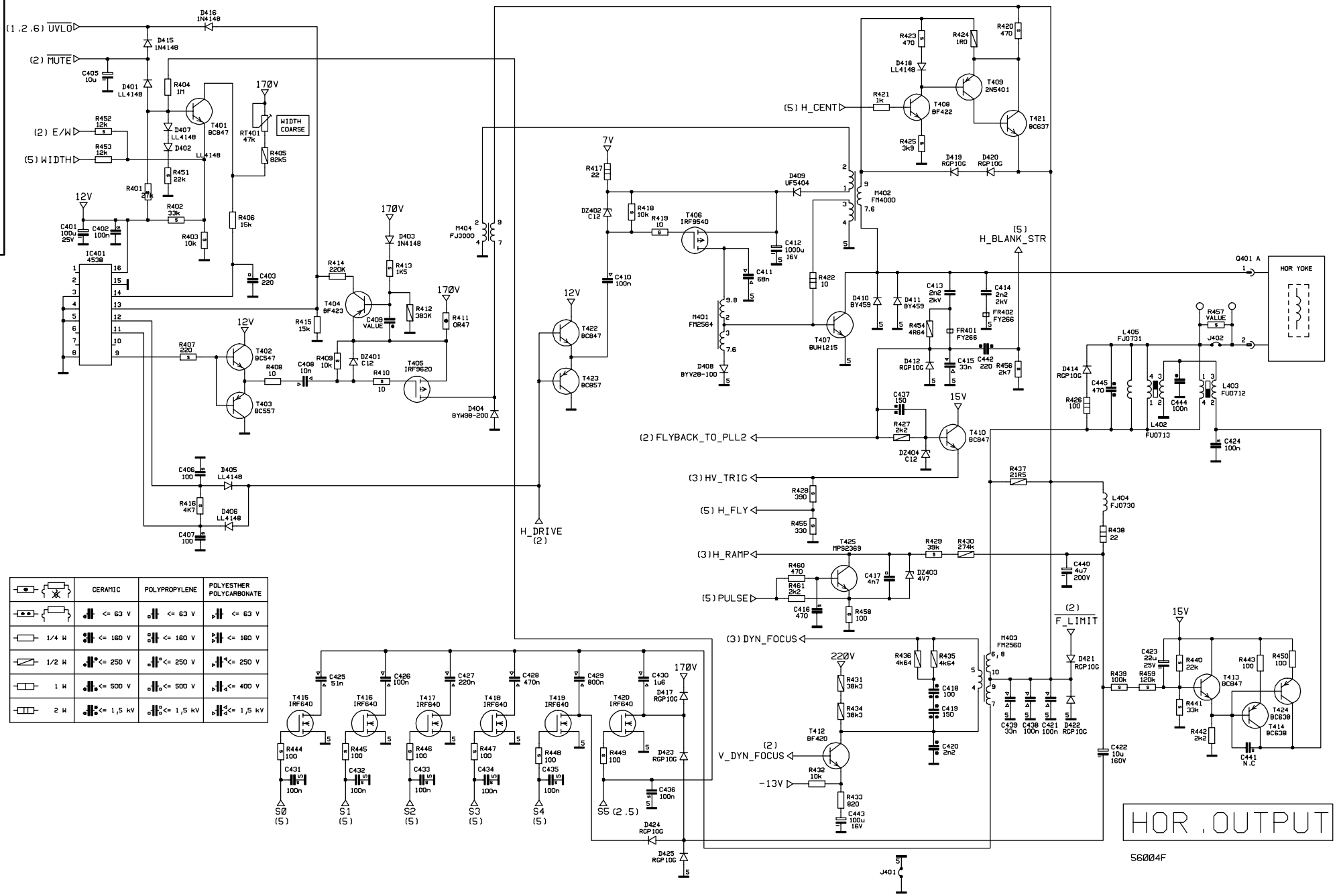
VERT .OUTPUT

DEFLECTION PROCESSOR

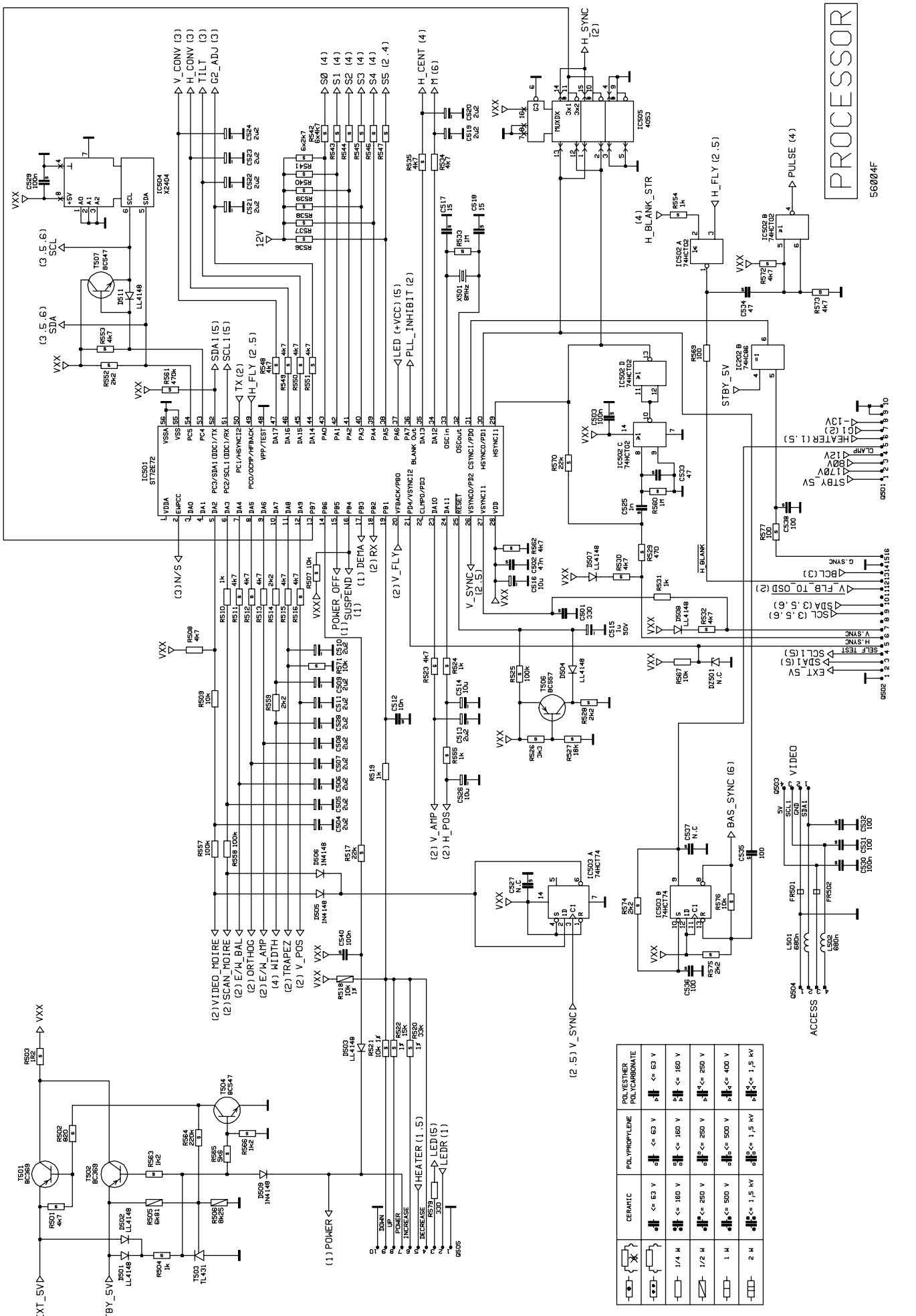
56004F

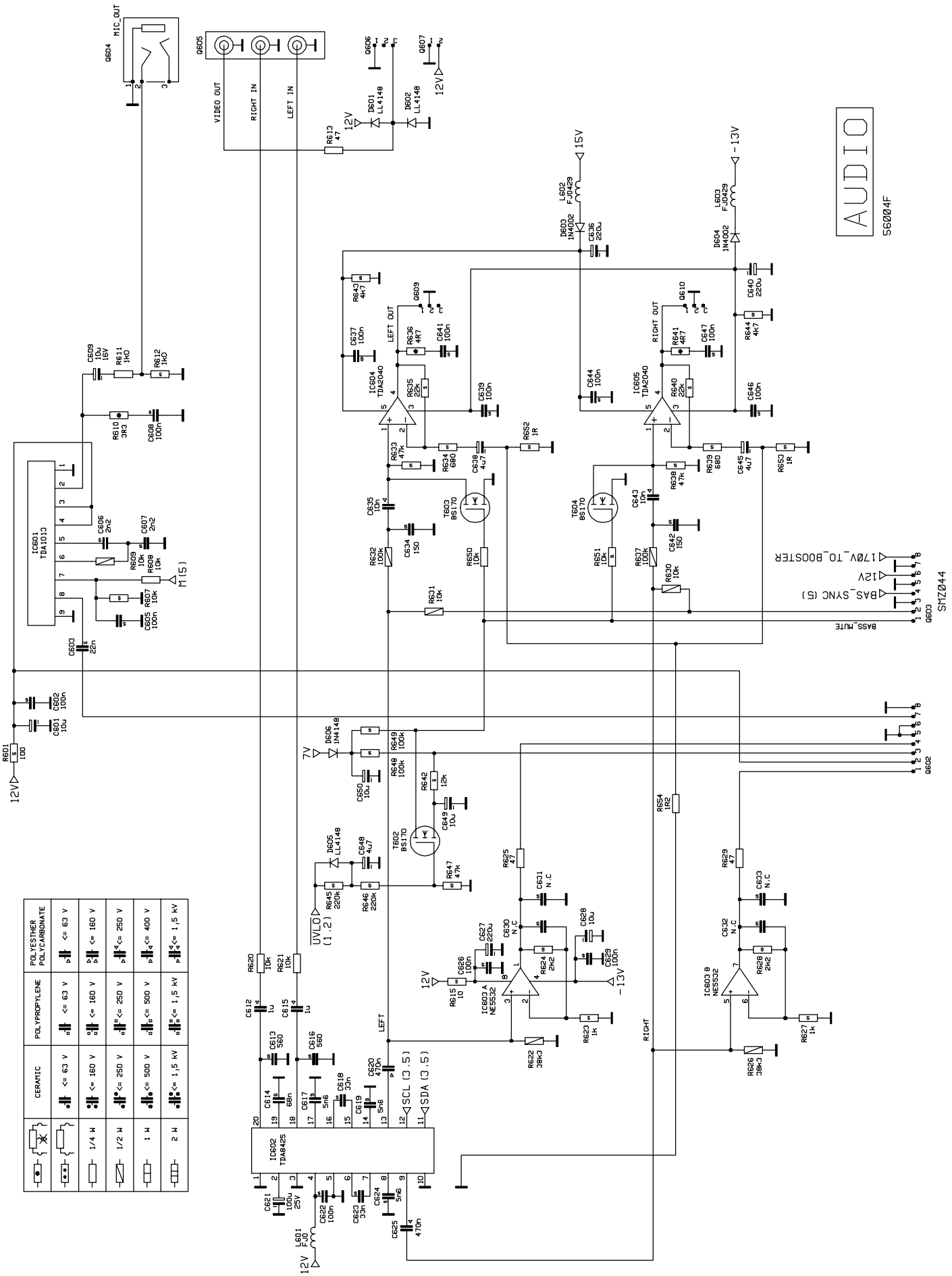
445P


DYN. KONVERGENCE
TILT
HV GENERATOR
SMA172F
D3100F 06.96 Page 3
445P
56004F
HV_TRIG (4)
OVER_VOLT (2)
DYN_FOCUS (4)
BCL (5)
G2_ADJ (5)
TILT (5)
(5) N/S
(3,5,6) SDA
(3,5,6) SCL
(5) H_CONV
V_RAMP (2)
H_RAMP (4)
V_CONV (5)
HIGH VOLT 27kV
ST.FOCUS RED
G2
DYN.FOCUS WHITE
POWER SYNC.
HV. ADJ
STBY_5V
12V
15V
-13V
170V
IC301 4538
IC303 MAS1012
IC302 TDA2040
IC304 LM324
M301 FM0629
CERAMIC
POLYPROPYLENE
POLYESTHER POLYCARBONATE



	CERAMIC	POLYPROPYLENE	POLYESTHER POLYCARBONATE
	<= 63 V	<= 63 V	<= 63 V
1/4 W	<= 160 V	<= 160 V	<= 160 V
1/2 W	<= 250 V	<= 250 V	<= 250 V
1 W	<= 500 V	<= 500 V	<= 400 V
2 W	<= 1,5 kV	<= 1,5 kV	<= 1,5 kV


PROCESSOR
56004F
IC501 ST72E72
V_CONV (3)
H_CONV (3)
TILT (3)
G2_ADJ (3)
S0 (4)
S1 (4)
S2 (4)
S3 (4)
S4 (4)
S5 (2,4)
H_CENT (4)
M (6)
H_SYNC (2)
PULSE (4)
H_FLY (2,5)
H_BLANK_STR (4)
SCL (3,5,6)
SDA (3,5,6)
SDA1 (5)
SCL1 (5)
TX (2)
LED (+VCC) (5)
PLL_INHIBIT (2)
12V
VXX
STBY_5V
EXT_5V
(3)N/S
(1)SUSPEND
(2)RX
(2)V_FLY
(2)V_SYNC
(2)V_AMP
(2)H_POS
(2)VIDEO_MOIRE
(2)SCAN_MOIRE
(2)E/W_BAL
(2)ORTHOG
(2)E/W_AMP
(4)WIDTH
(2)TRAPEZ
(2)V_POS
(1)POWER
(2,5)V_SYNC
BAS_SYNC (6)
VIDEO
ACCESS
HEATER (1,5)
LED(5)
LEDR (1)
POLYESTHER POLYCARBONATE
POLYPROPYLENE
CERAMIC


AUDIO
56004F
SMZ044
MIC_OUT
VIDEO OUT
RIGHT IN
LEFT IN
LEFT OUT
RIGHT OUT
BASS_MUTE
BAS_SYNC (5)
12V
170V_TO_BOOSTER
UVLO (1.2)
SCL (3.5)
SDA (3.5)
LEFT
RIGHT
CERAMIC
POLYPROPYLENE
POLYESTHER POLYCARBONATE

AUDIO

Part Number	Description	PG	Item Number
AA0633	R CF 0W25 22R J	1 R	350 141 142 144 336 353 369 366 377
AA0633	R CF 0W25 22R J	1 R	358 374 361
AA0641	R CF 0W25 47R J	1 R	625 629
AA0649	R CF 0W25 100R J	1 R	450 351 367 443 321 375 359 569
AA0651	R CF 0W25 120R J	1 R	337
AA0657	R CF 0W25 220R J	1 R	346 322 372
AA0661	R CF 0W25 330R J	1 R	579
AA0665	R CF 0W25 470R J	1 R	460 137 155
AA0669	R CF 0W25 680R J	1 R	344
AA0671	R CF 0W25 820R J	1 R	433
AA0673	R CF 0W25 1K0 J	1 R	329 421 510 519 611 531 149 148 147
AA0673	R CF 0W25 1K0 J	1 R	138 395 399 397 398 396
AA0677	R CF 0W25 1K5 J	1 R	116
AA0675	R CF 0W25 1K2 J	1 R	125
AA0681	R CF 0W25 2K2 J	1 R	427 380 381 559 442 167 461 514
AA0683	R CF 0W25 2K7 J	1 R	146 124
AA0687	R CF 0W25 3K9 J	1 R	110
AA0689	R CF 0W25 4K7 J	1 R	513 515 382 378 202 534 508
AA0691	R CF 0W25 5K6 J	1 R	154
AA0701	R CF 0W25 15K J	1 R	406 415
AA0693	R CF 0W25 6K8 J	1 R	123
AA0697	R CF 0W25 10K J	1 R	228 234 509 620 567 161 159 153 111
AA0697	R CF 0W25 10K J	1 R	333 621 608 239 432 650 651
AA0699	R CF 0W25 12K J	1 R	453 214
AA0705	R CF 0W25 22K J	1 R	168 393 169
AA0711	R CF 0W25 39K J	1 R	340
AA0713	R CF 0W25 47K J	1 R	387 227 238 158
AA0715	R CF 0W25 56K J	1 R	151 109
AA0719	R CF 0W25 82K J	1 R	201
AA0721	R CF 0W25 100K J	1 R	157 557 558 160 237
AA0729	R CF 0W25 220K J	1 R	414
AA0737	R CF 0W25 470K J	1 R	275
AA0745	R CF 0W25 1M0 J	1 R	233 404
AA0754	R CF 0W25 2M2 J	1 R	385 211
AA0755	R CF 0W25 2M7 J	1 R	390
AA0761	R CF 0W25 4M7 J	1 R	334 107 115
AB0785	R NF 0W5 0R22 J CF	2 R	318
AB0593	R NF 0W25 0R47 J CF	1 R	411
AB0609	R NF 0W25 2R2 J CF	1 R	281
AB0613	R NF 0W25 3R3 J CF	1 R	610
AB0617	R NF 0W25 4R7 J CF	1 R	636 641
AB0625	R NF 0W25 10R J CF	1 R	408 222
AB0633	R NF 0W25 22R J CF	1 R	114
AB0649	R NF 0W25 100R J CF	1 R	121 131
AB0795	R NF 0W5 0R56 J CF	2 R	143 119 118
AB0805	R NF 0W5 1R5 J CF	1 R	120
AC3366	R SMD 5K90 0W1 1%	1 R	277
AC3366	R SMD 5K90 0W1 1%	1 R	272 277
AC3388	R SMD 10K0 0W1 1%	1 R	270 521 271
AC3550	R SMD 0W1 33K 1%	1 R	520
AC3405	R SMD 15K0 0W1 1%	1 R	522
AC4403	R SMD 0W1 1R2 5%	1 R	503
AC4425	R SMD 0W1 10R 5%	1 R	615 419 410
AC4433	R SMD 0W1 22R 5%	1 R	316 309 310
AC4449	R SMD 0W1 100R 5%	1 R	449 448 447 446 445 444 577 305 458 601
AC4453	R SMD 0W1 150R 5%	1 R	207
AC4455	R SMD 0W1 180R 5%	1 R	371 347 355 363
AC4457	R SMD 0W1 220R 5%	1 R	407 348 317 225 354 356 362 364 370
AC4461	R SMD 0W1 330R 5%	1 R	455
AC4463	R SMD 0W1 390R 5%	1 R	428
AC4465	R SMD 0W1 470R 5%	1 R	349 365 368 357 360 373 376 352
AC4465	R SMD 0W1 470R 5%	1 R	529 423 420
AC4467	R SMD 0W1 560R 5%	1 R	320
AC4469	R SMD 0W1 680R 5%	1 R	634 639
AC4471	R SMD 0W1 820R 5%	1 R	502
AC4473	R SMD 0W1 1K0 5%	1 R	170 326 210 623 165 627 504 554 555 524
AC4473	R SMD 0W1 1K0 5%	1 R	612
AC4475	R SMD 0W1 1K2 5%	1 R	209 206 563 566
AC4477	R SMD 0W1 1K5 5%	1 R	413
AC4479	R SMD 0W1 1K8 5%	1 R	217
AC4481	R SMD 0W1 2K2 5%	1 R	552 574 575 528 327 314 306
AC4483	R SMD 0W1 2K7 5%	1 R	539 536 537 538 540 541 456
AC4485	R SMD 0W1 3K3 5%	1 R	526
AC4487	R SMD 0W1 3K9 5%	1 R	425
AC4489	R SMD 0W1 4K7 5%	1 R	553 572 551 550 549 546 545 530 523 416
AC4489	R SMD 0W1 4K7 5%	1 R	249 313 304 303 205 213 532 535 543 542
AC4489	R SMD 0W1 4K7 5%	1 R	573 501 511 562 624 512 628 643 644 516
AC4489	R SMD 0W1 4K7 5%	1 R	544 547 548
AC4491	R SMD 0W1 5K6 5%	1 R	244 245 252 253 565
AC4493	R SMD 0W1 6K8 5%	1 R	246 112
AC4497	R SMD 0W1 10K 5%	1 R	164 328 507 248 247 418 331 330 409 000
AC4497	R SMD 0W1 10K 5%	1 R	311 302 301 571 212 219 607 403 164
AC4497	R SMD 0W1 10K 5%	1 R	224 271 113 108 576
AC4499	R SMD 0W1 12K 5%	1 R	208 452
AC4503	R SMD 0W1 18K 5%	1 R	527
AC4505	R SMD 0W1 22K 5%	1 R	220 451 517 440 570 240 221 226 635
AC4505	R SMD 0W1 22K 5%	1 R	640
AC4507	R SMD 0W1 27K 5%	1 R	401 241 242 243 255 256 257 259
AC4509	R SMD 0W1 33K 5%	1 R	402 441
AC4511	R SMD 0W1 39K 5%	1 R	429
AC4513	R SMD 0W1 47K 5%	1 R	647 258 386 648 215
AC4515	R SMD 0W1 56K 5%	1 R	218
AC4517	R SMD 0W1 68K 5%	1 R	392
AC4519	R SMD 0W1 82K 5%	1 R	274 216 254 335
AC4521	R SMD 0W1 100K 5%	1 R	152 439 235 633 638 649 525
AC4523	R SMD 0W1 120K 5%	1 R	459 203
AC4525	R SMD 0W1 150K 5%	1 R	324
AC4529	R SMD 0W1 220K 5%	1 R	230 645 646 564
AC4537	R SMD 0W1 470K 5%	1 R	319 394 561
AC4539	R SMD 0W1 560K 5%	1 R	204
AC4545	R SMD 0W1 1M0 5%	1 R	533 236 560
AC4553	R SMD 0W1 2M2 5%	1 R	273 389 388
AC4561	R SMD 0W1 4M7 5%	1 R	166 379
AC8641	R SMD 0W12 47R J	1 R	613
AC8799	R SMD 0W12 0R0 JUMPER	1 J	811 812 813 814 815 816 817 801 802 803
AC8799	R SMD 0W12 0R0 JUMPER	1 J	804 805 806 807 808 809 810 818 819 820
AC8799	R SMD 0W12 0R0 JUMPER	1 J	821 822 823 824
AD0433	R COMP 0W5 330K K	1 R	101
AD0373	R COMP 0W5 1K0 K	1 R	332
AG3101	R MF 0W5 1R00 F	1 R	279 136 135 424
AG3165	R MF 0W5 4R64 F	1 R	454
AG3233	R MF 0W5 21R5 F	1 R	437
AG3301	R MF 0W5 100R F	1 R	315
AG3343	R MF 0W5 274R F	1 R	280
AG3373	R MF 0W5 562R F	1 R	145
AG3401	R MF 0W5 1K00 F	1 R	128 223
AG3433	R MF 0W5 2K15 F	1 R	150 343
AG3465	R MF 0W5 4K64 F	1 R	435 436
AG3473	R MF 0W5 5K62 F	1 R	345
AG3481	R MF 0W5 6K81 F	1 R	505
AG3489	R MF 0W5 8K25 F	1 R	307 506
AG3501	R MF 0W5 10K0 F	1 R	630 609 338 518 631
AG3525	R MF 0W5 17K8 F	1 R	339
AG3533	R MF 0W5 21K5 F	1 R	103 102
AG3543	R MF 0W5 27K4 F	1 R	231 106 308 232
AG3557	R MF 0W5 38K3 F	1 R	622 431 434 626
AG3589	R MF 0W5 82K5 F	1 R	323 405
AG3601	R MF 0W5 100K F	1 R	632 637
AG3619	R MF 0W5 154K F	1 R	139
AG3633	R MF 0W5 215K F	1 R	127
AG3643	R MF 0W5 274K F	1 R	105 104 430
AG3657	R MF 0W5 383K F	1 R	412
AJ2523	R MO 2W0 10R J	2 R	422
AJ2603	R MO 2W0 22R J	2 R	417 438
AJ2863	R MO 2W0 270R J	2 R	132 133
AJ2763	R MO 2W0 100R J	2 R	426
AJ3425	R MO 4W0 56K J	3 R	126
AQ0215	TPMET 47K	7 RT	401
AQ0215	Cermet 47K	RT	301
AQ2347	TPMET. H10 10K	4 RT	101
AW0079	PTC–THERMISTOR 18R/25'C	7 PTC	001
AW0111	NTC–THERMISTOR 5R0/25'C	7 NTC	001
CA0322	C CER 2N2 K 1KV	2 C	318 132
CA0324	C CER 100P K 1KV	2 C	418 150 323 152 148
CC0110	C CER 150P K 500V	1 C	437 419
CC0170	C CER 470P K 500V	1 C	445
CC0200	C CER 1N0 K 500V	1 C	236
CB3129	C CER SMD 15P 50V J	3 C	517 518
CB3133	C CER SMD 22P 50V J	1 C	339
CB3141	C CER SMD 47P 50V J	1 C	533 534
CB3145	C CER SMD 68P 50V J	1 C	302
CB3151	C CER SMD 100P 50V J	1 C	407 406 313 303 531 532 131 535 536 301
CB3151	C CER SMD 100P 50V J	1 C	538
CB3163	C CER SMD 330P 50V J	1 C	314 125
CB3167	C CER SMD 470P 50V J	2 C	126 121 634 642 416
CB3169	C CER SMD 560P 50V J	1 C	613 616
CB3171	C CER SMD 680P 50V J	1 C	212
CB3175	C CER SMD 1N0 50V J	3 C	237 525 217 242 308 122
CC0130	C CER 220P K 500V	1 C	238 442
CC0240	C CER 2N2 K 500V	1 C	420
CC0244	C CER 2N2 K 50V	1 C	155
CC3240	C CER SMD 2N2 10% 50V	1 C	606 607
CC0513	C CER 3N3 S 1KV	2 C	112 111 110 109
CC0530	C CER 4N7 S 500V	1 C	138
CC0772	C CER 10N Z 50V	1 C	334
CC0853	C CER 100N Z 25V	1 C	444
CC3280	C CER SMD 4N7 10% 50V	1 C	234 338
CC3290	C CER SMD 5N6 10% 50V	1 C	617 619 624
CC3320	C CER SMD 10N 10% 50V	1 C	241 204 512 340 304 205 202 244 214 219
CC3320	C CER SMD 10N 10% 50V	1 C	220 128 127 221 222 223 224 341
CC3360	C CER SMD 22N 10% 50V	1 C	603
CC3380	C CER SMD 33N 10% 50V	1 C	618 623
CC4400	C SMD 47N K 50V	2 C	210 211 502
CC4420	C SMD 68N K 50V	2 C	614
CC4440	C SMD 100N K 50V	2 C	209 216 227 232 503 529 530 602 605 608
CC4440	C SMD 100N K 50V	2 C	622 626 629 637 639 436 435 434 433 432
CC4440	C SMD 100N K 50V	2 C	431 424 402 324 316 641 644 646 647 540
CC4440	C SMD 100N K 50V	2 C	337 133 123
CE0081	C X2 220N K 250VAC	8 C	100
CE0116	C Y 2N2 M 400VAC	4 C	120 119 108 107 102 101
CE0522	C PCA MKC 100N J 63V	4 C	410
CE2004	C IMP 100P K 1K6V	3 C	139 143

Part Number	Description	PG	Item Number
CE2094	C IMP 820P K 1K5V	4	C 307
CE2196	C IMP 2N2 J 2KV	6	C 414 413
CE2671	C IMP 33N J 400V	4	C 439
CE2802	C IMP 51N J 400V	3	C 425
CE2931	C IMP 100N J 250V	4	C 426
CE2933	C IMP 100N K 400V	4	C 421 438
CE3020	C IMP 220N J 250V	3	C 427
CE3113	C IMP 470N J 250V	5	C 428
CE3180	C IMP 800N J 250V	10	C 429
CE3270	C IMP 1600N J 250V	12	C 430
CG2345	C PPR KP 220P J 63V	2	C 403
CG2663	C PPR KP 4N7 H 63V	4	C 417
CK0165	C PES MKT 22N K 630V	2	C 137 136
CE2671	C IMP 33N J 400V	4	C 415
CK0102	C PES MKT 10N K 250V	2	C 408
CK0221	C PES MKT 47N J 250V	2	C 142
CK0341	C PES MKT 220N K 100V	3	C 233
CK2864	C PES MKT 1U0 K 50V	5	C 612 615
CK2663	C PES MKT 150N J 63V	3	C 225
CK1388	C PES MKT 10N K 250V	2	C 305
CE2852	C IMP 68N J 400V	4	C 411
CK2424	C PES MKT 15N K 63V	2	C 124
CK2464	C PES MKT 22N K 63V	2	C 206
CK2545	C PES 47N K 63V	2	C 154 312
CK2626	C PES MKT 100N K 63V	2	C 336 164
CK2704	C PES MKT 220N K 63V	3	C 310 635 643
CK2784	C PES MKT 470N K 63V	3	C 620 228 625 319
CN0118	C ELYT 150U M 400V	16	C 114 113
CN0204	C ELYT 2U2 M 50V	1	C 650 504 505 506 507 508 509 510 511
CN0204	C ELYT 2U2 M 50V	1	C 513 519 520 521 522 523 524 235 201
CN0204	C ELYT 2U2 M 50V	1	C 528
CN0305	C ELYT 10U M 100V	8	C 218
CN0320	C ELYT 10U M 25V	2	C 601 628 609
CN0819	C ELYT 2200U M 25V	5	C 153 151 149
CN2017	C ELYT 1U0 M 50V	2	C 317 239 515 159 135
CN2027	C ELYT 47U M 50V	2	C 208 226
CN2030	C ELYT 10U M 35V	2	C 311
CN2032	C ELYT 10U M 50V	1	C 158 337 243 516 405 165 514 526 649 166
CN2037	C ELYT 10U M 160V	4	C 422
CN2228	C ELYT 4U7 M 200V	5	C 440
CN2372	C ELYT 22UF M 35V	3	C 423
CN2476	C ELYT 47U M 250V	9	C 141 140
CN2523	C ELYT 100U M 25V	3	C 621 401 320 146 134
CN2543	C ELYT 100U M 50V	2	C 215 230 443
CN2546	C ELYT 100UF M 100V	5	C 145
CN2553	C ELYT 0U47F M 50V	1	C 213 309
CN2581	C ELYT 220U M 35V	3	C 229 231
CN2566	C ELYT 4U7F M 50V	2	C 203 325 638 645 648
CN2576	C ELYT 220U M 16V	2	C 627 636 640
CN2656	C ELYT 470U M 35V	4	C 156
CN2712	C ELYT 1000U M 16V	5	C 412
FA0018	COIL SMD 680NH 10%	3	L 501 502
FJ0505	CHOKE 15UH 5%	2	L 601 106 102
FJ0429	CHOKE 33UH 10%	4	L 602 603
FJ0448	CHOKE 15UH	2	L 104 107
FJ0517	CHOKE 6.8UH 10%	3	L 105
FJ0725	BEAD INDUCTOR MIN IMP360HM	2	FR 402 401 501 502
FJ0730	LEAD INDUCTOR 270UH 10%	5	L 302 404
FJ0800	EMI/RFI CHOKE 60MH 3A(AC)	14	M 101
FJ1826	INPUT CHOKE E30/7 2X6,9 MH	12	M 103 102
FU0713	FIXED LIN.COIL W/DC–COIL S–N	7	L 402
FU0712	FIXED LIN.COIL W/DC–COIL N–S	16	L 403
FM3501	SMPS–TRAFO ETD49	20	M 104
FM0629	FLYBACK TRAFO 30..90KHZ 3NF	37	M 301
FM2564	DRIVER TRAFO E20/6	13	M 401
FM2560	DYNAMIC FOCUS TRAFO E20/6	12	M 403
FM4000	CENTERING TRAFO E25/7 1,0MH	14	M 402
FJ3000	INPUT CHOKE E25/7 727UH	13	M 404
JB0042A	DI BY459 1500V 10A	13	D 410 411
JB0047	DI GP30M 1000V 3A	4	D 104 103 102 101
JF0022	DI 1N4148	1	D 403 206 205 108 303 509
JF0022	DI 1N4148	1	D 105 415 416 606 506
JF0032	DI UF4007 1000V 1A	4	D 118 113
JF0060	DI 1N4002 100V 1A	1	D 207 128 603 604
JF0033	DI UF5404 400V 3A	4	D 409 126
JF0034	DI UF5406 600V 3A	9	D 306
JF0072	DI BAV21 200V 250MA	1	D 204 111 112
JF0073	DI RGP10G 400V 1A	4	D 417 414 412 419 420 425 424 423 421 422
JF0096	DI BYV28–100 100V 3.5A	7	D 408 125
JF0107	DI BYV26C 600V 1A	5	D 120
JF0166R	DI BYM26C 600V 2.3A	6	D 119
JF0168	DI BYW98–200 200V 3A	4	D 404
JF0171	DI BYV29–400 400V 8A	9	D 124
JF0206	DI 1N5818 30V 1A SCHOTTKY	4	D 110 202 203
JF4005	DI LL4148 75V 150MA	1	D 317 318 127 402 407 201 418 601 504 503
JF4005	DI LL4148 75V 150MA	1	D 502 501 129 602 136 406 405 505 401 511
JF4005	DI LL4148 75V 150MA	1	D 605 305 304 508 302 301 135 316 507 133
JF4005	DI LL4148 75V 150MA	1	D 131 109 418 107 106
JH0054	ZDI BZX83C12 12V 0.5W 5%	1	DZ 402 401 103 404
JH0086	ZDI BZX83C4V7 4.7V 0.5W 5%	2	DZ 403 101
JH0081	ZDI ZPY 3.9 3.9V 1.3W 5%	1	DZ 102
JH4118	ZDI BZX84C12 12V 0.35W 5%	2	DZ 301

Part Number	Description	PG	Item Number
JL0066	OPTOCOUPLER CNX82A 3750VRMS	7	IC 102
JM0099	TR BC547B N 45V 100A	1	T 307 305 301 402 323
JM0099	TR BC547B N 45V 100A	1	T 327 319 504
JM0100	TR BC557B P 45V 100A	1	T 308 306 302 506 403 322
JM0100	TR BC557B P 45V 100A	1	T 326 314 318
JM0205	TR BF423 P 250V 25MA	3	T 404 110 205
JM0239	TR BC638 P 60V 1A	4	T 414 424
JM0206	TR BF420 N 300V 100MA	12	T 412
JM0227	TR MPS2369 N 15V 200MA	3	T 425
JM0244	TR BF422 N 250V 25MA	2	T 311 102 101 408 106 206
JM0280	TR 2N5401 P 150V 0.6A	2	T 409
JM0281	TR BC368 N 20V 1A	4	T 115
JM0282	TR BC369 P 20V 1A	6	T 501 502
JM0255	TR BC637–6/–10 N 60V 1A	4	T 421
JM0334	TR BD135 NPN 45V 1A5 250MHZ	4	T 328 332 330 334
JM0335	TR BD136 PNP 45V 1A5 250MHZ	4	T 333 329 335 331
JM0341	TR BUH1215(435B) N 1500V 19A	19	T 407
JF4101	DI RHRD460S 600V 4A	8	D 122
JM4105	TR BC847B N 45V 0.1A	4	T 413 410 312 401 309 119 201 104 422 315
JM4105	TR BC847B N 45V 0.1A	4	T 316 320 324 507
JM4114	TR BC857B P 45V 100MA	2	T 321 113 126 202 310 103 423 313 317 325
JM4401	TR BCR141W 50V 0.1A	2	T 116 114
JS0019	FET IRF640 N 200V 18A	13	T 415 416
JS0019	FET IRF640 N 200V 18A	13	T 417 418 419 420
JS0063	FET IRFIBE30G N 800V 2,1A 3R0	23	T 304
JS0062	FET IRFPC50 N 600V 11A OR60	17	T 105
JS0033	FET IRFD014 N 60V 1.7A	7	T 118 117 112
JS0051	FET IRF9540 P 100V 19A 0.2R	14	T 406
JS0058	FET IRF9620 P 200V 1R5 3A	10	T 303 405
JS1006	FET BS170 N 60V 500MA	10	T 123 602 603 604
JS4001	FET BSP126 N 250V 350MA	7	T 207
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	T 405 406 304 303 604 605
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	IC 106 203 105 302
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	D 124
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	T 329 328 331 332 335 334 333 330
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	D 411 410
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	T 417 418 419 420
JZ0010	SILICONE INSUL. 20*25*0.22MM	8	T 407 105
LM0067	IC UA7805UC +5V REGULATOR	13	IC 105
LM0256	IC 7812 +12V REGULATOR	4	IC 106
LM0547	IC TDA1013B AUDIO POWER AMPL	11	IC 601
LM0340	IC TDA2040V AUDIO POWER AMPLIFIER	14	IC 302 604 605
LM0945	IC 24C65 SERIAL EEPROM 8X8K DIP–8	16	IC 504
LM0930	IC STV9379 VERT.DEFL.BOOSTER	15	IC 203
LM0663	IC TL431 VOLTAGE REFERENCE	6	T 503 111
LM0755	IC TDA8425 AUDIO PROCESSOR	21	IC 602
LM0763	IC UC3842 CURRENT MODE PWM CONT.	12	IC 101
LM0941	IC NE5532 LOW–NOISE DUAL OP–AMP	7	IC 603
LM4017	IC 74HCT02 QUAD 2–INPUT NOR	4	IC 502
LM0931	IC MAS1010 DYN.CONV.CONTROL IC	21	IC 303
LM0937	IC TDA9105 DEFLECTION PROCESSOR	20	IC 201
LM0938	IC ST72E72 MONITOR UC,DDC	34	IC 501
LM4022	IC 74HCT74 DUAL D–FLIP–FLOP	5	IC 503
LM4101	IC 4053B MUX/DEMUX ANAL.3X2–CHAN	7	IC 505
LM4111	IC 4538BT	5	IC 301 401
LM4208	IC 74HC86 2–INPUT EXCL. OR	4	IC 202
LM4406	IC LM324 QUAD OP–AMP	5	IC 304
LZ0063	IC–SOCKET 56–POLE	10	IC 501
QH0065	RELAY PCB–MOUNTING 12V 5A/250V	12	RE 001
QK1095	PIN STRIP 1X02	3	Q 301
QK1224	ROW CONN 1X04	2	Q 610
QK1285	ROW CONN 1X05	3	Q 102
QK1287	PIN STRIP 1X04	3	Q 401
QK1463	ROW CONN JST 1X02	2	
QK1464	ROW CONN JST 1X03	4	Q 606
QK1497	MINIATURE JACK 3.5MM FOR MIC.OUT	4	Q 604
QK1620	ACCESS.BUS CONN	14	Q 504
QK1531	PIN STRIP 1X08	4	Q 302
QK1695	RCAJACK UNIT 3X6.3MM	8	Q 605
QK1587	COOLING & SUPP.PART FOR RESISTOR	1	R 126
QK1650	MAINS CONN MALE 90DEG W/PCB SNAPS	8	Q 101
QK1703	PICOFLEX HEADER 1X08	3	Q 603
QK1703	PICOFLEX HEADER 1X08	3	Q 602
QM1006	PICOFLEX ASSY BI–IDC 16–POS 550MM	12	Q 502
QM1011	PICOFLEX ASSY BI–IDC 4–POS 300MM	7	Q 503
QM1002	PICOFLEX ASSY BI–IDC 10–POS 150MM	9	Q 505
QT0102	FUSEHOLDER CLIPS 5*20MM R=5,0MM	1	F 101
QT0733	FUSE R=5,0MM T 3,15A 250V IEC127	4	F 102
QT0775	FUSE 5*20MM T 6,3A 250V 1500A	3	F 101
QT0002	SPARK GAP 1,2KV +–500V R=5,0MM	3	GL 302 303
QT0207	GLIMM LAMP 95V 6*12,5MM	4	GL 301
SE2530	POWER SYNC. WIRE	8	
SE2643	VERTICAL WIRE	6	V 001 002
QM1007	PICOFLEX ASSY BI–IDC 10–POS 500MM	10	Q 501
QA0095	CRYSTAL 8,00 MHZ HC–49/U	4	X 501
UC0859	FASTENING SPRING	2	T 417 418
UC0859	FASTENING SPRING	2	T 419 420 405 406 304 303
UC0859	FASTENING SPRING	2	D 124 125
UC0859	FASTENING SPRING	2	IC 302 106 105
UC1140	HEATSINK	2	IC 106 105 302
UC1140	HEATSINK	2	T 303 304 406 405
UC1140	HEATSINK	2	D 124

Part Number	Description	PG	Item Number
UC2653	HEATSINK		IC 604 605
UC6551	FASTENING SPRING	3	IC 203
UC6551	FASTENING SPRING	3	D 410 411
UC6552	FASTENING SPRING	3	T 407 105
UC6564	COOLINGPLATE	5	T 105
UC6564	COOLINGPLATE	5	IC 203
UC6664	HEATSINK	14	T 329 328 331 330 335 334 333 332 417 418
UC6664	HEATSINK	14	T 419 420
UC6668	FASTENING SPRING	2	T 329 328 331 330 335 334 333 332
UC6743	SUPPORT	6	
UC6752	WASHER	1	
UC6784	HEATSINK	4	
UC6817	HEATSINK	14	T 407
UC6817	HEATSINK	14	D 410 411
UC6818	SUPPORT	8	
UJ0125	TIES/LEAD BAND SST 1 M	1	M 301
WC0446	HEX PT–SCREW 2,9X8	1	
SE2527	GROUNDING WIRE	6	
SE2652	MAGN.FIELD COMPENSATION WIRE	11	
WC0353	PT–SCREW KB 40X10	3	M 301

NON AUDIO

AA0633	R CF 0W25 22R J	1	R	350 141 142 144 336 353 369 366 377
AA0633	R CF 0W25 22R J	1	R	358 374 361
AA0649	R CF 0W25 100R J	1	R	450 351 367 443 321 375 359 569
AA0651	R CF 0W25 120R J	1	R	337
AA0657	R CF 0W25 220R J	1	R	346 322 372
AA0661	R CF 0W25 330R J	1	R	630 642
AA0665	R CF 0W25 470R J	1	R	137 155
AA0673	R CF 0W25 1K0 J	1	R	329 421 510 519 531 149 148 147
AA0673	R CF 0W25 1K0 J	1	R	138 395 399 397 398 396
AA0677	R CF 0W25 1K5 J	1	R	116 433 458
AA0675	R CF 0W25 1K2 J	1	R	125 432
AA0681	R CF 0W25 2K2 J	1	R	427 380 381 559 442 167 164 514
AA0683	R CF 0W25 2K7 J	1	R	146 124
AA0687	R CF 0W25 3K9 J	1	R	110
AA0689	R CF 0W25 4K7 J	1	R	513 515 382 378 202 534 508
AA0701	R CF 0W25 15K J	1	R	406 415
AA0693	R CF 0W25 6K8 J	1	R	123
AA0701	R CF 0W25 15K J	1	R	239
AA0697	R CF 0W25 10K J	1	R	224 228 234 509 239 567 161 159 153 111
AA0697	R CF 0W25 10K J	1	R	333
AA0699	R CF 0W25 12K J	1	R	453 214
AA0705	R CF 0W25 22K J	1	R	393 169
AA0711	R CF 0W25 39K J	1	R	340
AA0713	R CF 0W25 47K J	1	R	154 387 227 238 158
AA0715	R CF 0W25 56K J	1	R	151 109
AA0719	R CF 0W25 82K J	1	R	201
AA0721	R CF 0W25 100K J	1	R	157 557 558 160 237
AA0729	R CF 0W25 220K J	1	R	414
AA0737	R CF 0W25 470K J	1	R	275
AA0745	R CF 0W25 1M0 J	1	R	233 404
AA0754	R CF 0W25 2M2 J	1	R	385 211
AA0755	R CF 0W25 2M7 J	1	R	390
AA0761	R CF 0W25 4M7 J	1	R	334
AB0785	R NF 0W5 0R22 J CF	2	R	318
AB0593	R NF 0W25 0R47 J CF	1	R	411
AB0609	R NF 0W25 2R2 J CF	1	R	281
AB0625	R NF 0W25 10R J CF	1	R	408 222
AB0633	R NF 0W25 22R J CF	1	R	114
AB0649	R NF 0W25 100R J CF	1	R	121 131
AB0795	R NF 0W5 0R56 J CF	2	R	143 119 118
AB0805	R NF 0W5 1R5 J CF	1	R	120
AC3388	R SMD 10K0 0W1 1%	1	R	521
AC3550	R SMD 0W1 33K 1%	1	R	520
AC3405	R SMD 15K0 0W1 1%	1	R	522
AC4403	R SMD 0W1 1R2 5%	1	R	503
AC4425	R SMD 0W1 10R 5%	1	R	419 410
AC4433	R SMD 0W1 22R 5%	1	R	316 309 310
AC4449	R SMD 0W1 100R 5%	1	R	449 448 447 446 445 444 305
AC4453	R SMD 0W1 150R 5%	1	R	207
AC4455	R SMD 0W1 180R 5%	1	R	371 347 355 363
AC4457	R SMD 0W1 220R 5%	1	R	407 348 317 225 354 356 362 364 370
AC4461	R SMD 0W1 330R 5%	1	R	455
AC4463	R SMD 0W1 390R 5%	1	R	428
AC4465	R SMD 0W1 470R 5%	1	R	556 349 365 368 357 360 373 376 352
AC4465	R SMD 0W1 470R 5%	1	R	529 423
AC4467	R SMD 0W1 560R 5%	1	R	320
AC4473	R SMD 0W1 1K0 5%	1	R	170 326 210 165 504 554 555 524
AC4475	R SMD 0W1 1K2 5%	1	R	209 206 563 566
AC4477	R SMD 0W1 1K5 5%	1	R	413
AC4479	R SMD 0W1 1K8 5%	1	R	217
AC4481	R SMD 0W1 2K2 5%	1	R	528 327 314 306
AC4483	R SMD 0W1 2K7 5%	1	R	539 536 537 538 540 541 456
AC4485	R SMD 0W1 3K3 5%	1	R	526
AC4487	R SMD 0W1 3K9 5%	1	R	425
AC4489	R SMD 0W1 4K7 5%	1	R	553 552 551 550 549 546 545 530 523 416
AC4489	R SMD 0W1 4K7 5%	1	R	249 313 304 303 205 213 532 535 543 542
AC4489	R SMD 0W1 4K7 5%	1	R	501 511 562 512 516
AC4489	R SMD 0W1 4K7 5%	1	R	544 547 548
AC4491	R SMD 0W1 5K6 5%	1	R	244 245 252 253 565
AC4493	R SMD 0W1 6K8 5%	1	R	246 112
AC4497	R SMD 0W1 10K 5%	1	R	342 328 248 247 418 331 330 409 000 0

Part Number	Description	PG	Item Number
AC4497	R SMD 0W1 10K 5%	1	R 311 302 301 571 212 219 403
AC4497	R SMD 0W1 10K 5%	1	R 429 113 108
AC4499	R SMD 0W1 12K 5%	1	R 208 452
AC4503	R SMD 0W1 18K 5%	1	R 527
AC4505	R SMD 0W1 22K 5%	1	R 220 451 517 168 440 570 240 221 226
AC4507	R SMD 0W1 27K 5%	1	R 401 241 242 243 255 256 257 259
AC4509	R SMD 0W1 33K 5%	1	R 402 441
AC4513	R SMD 0W1 47K 5%	1	R 258 386 215
AC4515	R SMD 0W1 56K 5%	1	R 218
AC4517	R SMD 0W1 68K 5%	1	R 392
AC4519	R SMD 0W1 82K 5%	1	R 274 216 254 335
AC4521	R SMD 0W1 100K 5%	1	R 152 439 525
AC4523	R SMD 0W1 120K 5%	1	R 459 203
AC4525	R SMD 0W1 150K 5%	1	R 324
AC4529	R SMD 0W1 220K 5%	1	R 230 341 235 564
AC4537	R SMD 0W1 470K 5%	1	R 319 394
AC4539	R SMD 0W1 560K 5%	1	R 204
AC4545	R SMD 0W1 1M0 5%	1	R 533 236 560
AC4553	R SMD 0W1 2M2 5%	1	R 273 389 388
AC4561	R SMD 0W1 4M7 5%	1	R 166
AC8799	R SMD 0W12 0R0 JUMPER	1	J 811 812 813 814 815 816 801 802 803
AC8799	R SMD 0W12 0R0 JUMPER	1	J 804 805 806 807 808 809 810
AD0433	R COMP 0W5 330K K	1	R 101
AD0373	R COMP 0W5 1K0 K	1	R 332
AD1967	R SAFE 0W5 8M2 K	1	R 107
AG3101	R MF 0W5 1R00 F	1	R 279 136 135 424
AG3165	R MF 0W5 4R64 F	1	R 454
AG3233	R MF 0W5 21R5 F	1	R 437
AG3301	R MF 0W5 100R F	1	R 315
AG3343	R MF 0W5 274R F	1	R 280
AG3373	R MF 0W5 562R F	1	R 145
AG3401	R MF 0W5 1K00 F	1	R 128 223
AG3433	R MF 0W5 2K15 F	1	R 150
AG3465	R MF 0W5 4K64 F	1	R 435 436
AG3481	R MF 0W5 6K81 F	1	R 277 272 505
AG3489	R MF 0W5 8K25 F	1	R 307 506
AG3501	R MF 0W5 10K0 F	1	R 338 518
AG3509	R MF 0W5 12K1 F	3	R 270 271
AG3525	R MF 0W5 17K8 F	1	R 339
AG3533	R MF 0W5 21K5 F	1	R 103 102
AG3543	R MF 0W5 27K4 F	1	R 231 106 308 232
AG3557	R MF 0W5 38K3 F	1	R 431 434
AG3589	R MF 0W5 82K5 F	1	R 323 405
AG3619	R MF 0W5 154K F	1	R 139
AG3633	R MF 0W5 215K F	1	R 430 127
AG3643	R MF 0W5 274K F	1	R 105 104
AG3657	R MF 0W5 383K F	1	R 412
AJ2523	R MO 2W0 10R J	2	R 422
AJ2603	R MO 2W0 22R J	2	R 417 438
AJ2863	R MO 2W0 270R J	2	R 132 133
AJ2763	R MO 2W0 100R J	2	R 426
AJ3425	R MO 4W0 56K J	3	R 126
AQ2219	TPMET. 47K	3	RT 401 301
AQ2347	TPMET. H10 10K	4	RT 101
AW0079	PTC–THERMISTOR 18R/25'C	7	PTC 001
AW0111	NTC–THERMISTOR 5R0/25'C	7	NTC 001
CA0322	C CER 2N2 K 1KV	2	C 318 132
CA0324	C CER 100P K 1KV	2	C 418 150 323 152 148
CC0110	C CER 150P K 500V	1	C 437 419
CC0200	C CER 1N0 K 500V	1	C 236
CB3129	C CER SMD 15P 50V J	3	C 517 518
CB3133	C CER SMD 22P 50V J	1	C 339 416
CB3141	C CER SMD 47P 50V J	1	C 533
CB3145	C CER SMD 68P 50V J	1	C 302
CB3151	C CER SMD 100P 50V J	1	C 407 406 313 303 531 532 131 301
CB3163	C CER SMD 330P 50V J	1	C 314 125
CB3167	C CER SMD 470P 50V J	2	C 126 121
CB3171	C CER SMD 680P 50V J	1	C 212
CB3175	C CER SMD 1N0 50V J	3	C 237 525 217 242 308 122
CC0130	C CER 220P K 500V	1	C 238 442
CC0240	C CER 2N2 K 500V	1	C 420
CC0244	C CER 2N2 K 50V	1	C 155
CC0513	C CER 3N3 S 1KV	2	C 112 111 110 109
CC0530	C CER 4N7 S 500V	1	C 138
CC0772	C CER 10N Z 50V	1	C 334
CC0853	C CER 100N Z 25V	1	C 444
CC3240	C CER SMD 2N2 10% 50V	1	C 322
CC3280	C CER SMD 4N7 10% 50V	1	C 234 338
CC3320	C CER SMD 10N 10% 50V	1	C 404 204 512 340 304 205 202 214 219
CC3320	C CER SMD 10N 10% 50V	1	C 220 128 127 221 222 223 224
CC4400	C SMD 47N K 50V	2	C 210 211 502
CC4440	C SMD 100N K 50V	2	C 209 216 227 232 503 529 530
CC4440	C SMD 100N K 50V	2	C 436 435 434 433 432
CC4440	C SMD 100N K 50V	2	C 431 424 402 324 316 000 0
CC4440	C SMD 100N K 50V	2	C 133 123
CE0081	C X2 220N K 250VAC	8	C 100
CE0116	C Y 2N2 M 400VAC	4	C 120 119 108 107 102 101
CE0522	C PCA MKC 100N J 63V	4	C 410
CE2004	C IMP 100P K 1K6V	3	C 139 143
CE2094	C IMP 820P K 1K5V	4	C 307
CE2196	C IMP 2N2 J 2KV	6	C 414 413
CE2671	C IMP 33N J 400V	4	C 439
CE2802	C IMP 51N J 400V	3	C 425
CE2931	C IMP 100N J 250V	4	C 426

Part Number	Description	PG		Item Number
CE2933	C IMP 100N K 400V	4	C	421 438
CE3020	C IMP 220N J 250V	3	C	427
CE3113	C IMP 470N J 250V	5	C	428
CE3180	C IMP 800N J 250V	10	C	429
CE3270	C IMP 1600N J 250V	12	C	430
CG2345	C PPR KP 220P J 63V	2	C	403
CG2663	C PPR KP 4N7 H 63V	4	C	417
CK0165	C PES MKT 22N K 630V	2	C	137 136
CE2671	C IMP 33N J 400V	4	C	415
CK0102	C PES MKT 10N K 250V	2	C	408
CK0221	C PES MKT 47N J 250V	2	C	142
CK0341	C PES MKT 220N K 100V	3	C	233
CK2663	C PES MKT 150N J 63V	3	C	225
CK1388	C PES MKT 10N K 250V	2	C	305
CE2852	C IMP 68N J 400V	4	C	411
CK2424	C PES MKT 15N K 63V	2	C	124
CK2464	C PES MKT 22N K 63V	2	C	206
CK2545	C PES 47N K 63V	2	C	154 312
CK2626	C PES MKT 100N K 63V	2	C	336 164
CK2704	C PES MKT 220N K 63V	3	C	310
CK2784	C PES MKT 470N K 63V	3	C	228 319
CN0118	C ELYT 150U M 400V	16	C	114 113
CN0204	C ELYT 2U2 M 50V	1	C	443 504 505 506 507 508 509 510 511
CN0204	C ELYT 2U2 M 50V	1	C	513 519 520 521 522 523 524 235 201
CN0204	C ELYT 2U2 M 50V	1	C	528
CN0305	C ELYT 10U M 100V	8	C	218
CN0819	C ELYT 2200U M 25V	5	C	153 151 149
CN2017	C ELYT 1U0 M 50V	2	C	325 317 239 515 159 135
CN2027	C ELYT 47U M 50V	2	C	208 226
CN2030	C ELYT 10U M 35V	2	C	311
CN2032	C ELYT 10U M 50V	1	C	158 337 243 516 405 165 514 526 166
CN2037	C ELYT 10U M 160V	4	C	422
CN2232	C ELYT 4U7 M 200V	4	C	440
CN2372	C ELYT 22UF M 35V	3	C	423
CN2476	C ELYT 47U M 250V	9	C	141 140
CN2523	C ELYT 100U M 25V	3	C	401 320 146 134
CN2543	C ELYT 100U M 50V	2	C	215 230
CN2546	C ELYT 100UF M 100V	5	C	145
CN2553	C ELYT 0U47F M 50V	1	C	213 309
CN2581	C ELYT 220U M 35V	3	C	229 231
CN2566	C ELYT 4U7F M 50V	2	C	203
CN2656	C ELYT 470U M 35V	4	C	156
CN2712	C ELYT 1000U M 16V	5	C	412
FA0018	COIL SMD 680NH 10%	3	L	501 502
FJ0505	CHOKE 15UH 5%	2	L	106 102
FJ0448	CHOKE 15UH	2	L	104 107
FJ0517	CHOKE 6.8UH 10%	3	L	105
FJ0725	BEAD INDUCTOR MIN IMP360HM	2	FR	402 401 501 502
FJ0730	LEAD INDUCTOR 270UH 10%	5	L	302 404
FJ0800	EMI/RFI CHOKE 60MH 3A(AC)	14	M	101
FJ1826	INPUT CHOKE E30/7 2X6,9 MH	12	M	103 102
FU0713	FIXED LIN.COIL W/DC–COIL S–N	7	L	402
FU0712	FIXED LIN.COIL W/DC–COIL N–S	16	L	403
FM3501	SMPS–TRAFO ETD49	12	M	104
FM0629	FLYBACK TRAFO 30..90KHZ 3NF	37	M	301
FM2564	TRAFO	13	M	401
FM2560	DYNAMIC FOCUS TRAFO E20/6	12	M	403
FM4000	CENTERING TRAFO E25/7 1,0MH	14	M	402
FJ3000	INPUT CHOKE E25/7 727UH	13	M	404
JB0042A	DI BY459 1500V 10A	13	D	410 411
JB0047	DI GP30M 1000V 3A	4	D	104 103 102 101
JF0022	DI 1N4148	1	D	403 206 205 108 303 509
JF0022	DI 1N4148	1	D	105 415 416 505 506
JF0032	DI UF4007 1000V 1A	4	D	118 113
JF0060	DI 1N4002 100V 1A	1	D	207 128
JF0033	DI UF5404 400V 3A	4	D	409 126
JF0034	DI UF5406 600V 3A	9	D	306
JF0062	DI BA159 1000V 400MA	2	D	426
JF0072	DI BAV21 200V 250MA	1	D	204 111 112
JF0073	DI RGP10G 400V 1A	4	D	417 414 412 419 420 425 424 423 421 422
JF0096	DI BYV28–100 100V 3.5A	7	D	408 125
JF0107	DI BYV26C 600V 1A	5	D	120
JF0166R	DI BYM26C 600V 2.3A	6	D	119
JF0168	DI BYW98–200 200V 3A	4	D	404
JF0171	DI BYV29–400 400V 8A	9	D	124
JF0206	DI 1N5818 30V 1A SCHOTTKY	4	D	110 202 203
JF4005	DI LL4148 75V 150MA	1	D	317 318 127 402 407 201 418 504 503
JF4005	DI LL4148 75V 150MA	1	D	502 501 129 406 405 401
JF4005	DI LL4148 75V 150MA	1	D	305 304 508 302 301 135 316 507 133
JF4005	DI LL4148 75V 150MA	1	D	131 109 418 107 106
JH0054	ZDI BZX83C12 12V 0.5W 5%	1	DZ	402 401 103 404
JH0086	ZDI BZX83C4V7 4.7V 0.5W 5%	2	DZ	403 101
JH0081	ZDI ZPY 3.9 3.9V 1.3W 5%	1	DZ	102
JH4118	ZDI BZX84C12 12V 0.35W 5%	2	DZ	301
JL0066	OPTOCOUPLER CNX82A 3750VRMS	7	IC	102
JM0099	TR BC547B N 45V 100A	1	T	307 305 301 402 323
JM0099	TR BC547B N 45V 100A	1	T	327 319 504
JM0100	TR BC557B P 45V 100A	1	T	308 306 302 425 506 403 322
JM0100	TR BC557B P 45V 100A	1	T	326 314 318
JM0205	TR BF423 P 250V 25MA	3	T	404 110 205
JM0239	TR BC638 P 60V 1A	4	T	414 424

Part Number	Description	PG		Item Number
JM0244	TR BF422 N 250V 25MA	2	T	412 311 102 101 408 106 206
JM0280	TR 2N5401 P 150V 0.6A	2	T	409
JM0281	TR BC368 N 20V 1A	4	T	115
JM0282	TR BC369 P 20V 1A	6	T	501 502
JM0255	TR BC637–6/–10 N 60V 1A	4	T	421
JM0334	TR BD135 NPN 45V 1A5 250MHZ	4	T	328 332 330 334
JM0335	TR BD136 PNP 45V 1A5 250MHZ	4	T	333 329 335 331
JM0341	TR BUH1215(435B) N 1500V 19A	19	T	407
JF4101	DI RHRD460S 600V 4A	8	D	122
JM4105	TR BC847B N 45V 0.1A	4	T	413 410 312 401 309 119 201 104 422 315
JM4105	TR BC847B N 45V 0.1A	4	T	316 320 324
JM4114	TR BC857B P 45V 100MA	2	T	321 113 126 202 310 103 423 313 317 325
JM4401	TR BCR141W 50V 0.1A (2X22K)	2	T	411 116 114
JS0019	FET IRF640 N 200V 18A	13	T	415 416
JS0019	FET IRF640 N 200V 18A	13	T	417 418 419 420
JS0063	FET IRFIBE30G N 800V 2,1A 3R0	23	T	304
JS0062	FET IRFPC50 N 600V 11A OR60	17	T	105
JS0033	FET IRFD014 N 60V 1.7A HD–1	7	T	118 117 112
JS0051	FET IRF9540 P 100V 19A 0.2R	14	T	406
JS0058	FET IRF9620 P 200V 1R5 3A	10	T	303 405
JS1006	FET BS170 N 60V 500MA	10	T	123
JS4001	FET BSP126 N 250V 350MA	7	T	207
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	T	405 406 304 303
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	IC	106 203 105 302
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	D	124
AC4471	R SMD 0W1 820R 5%	1	T	502
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	T	329 328 331 332 335 334 333 330
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	D	410 411
JZ0005	ISOLATOR PAD 19x13x0.22MM	1	T	418 419 420 417
JZ0010	SILICONE INSUL. 20x25x0.22MM	8	T	105 407
LM0067	IC UA7805UC +5V REGULATOR	13	IC	105
LM0256	IC 7812 +12V REGULATOR	4	IC	106
LM0340	IC TDA2040V AUDIO POWER AMPLIFIER	14	IC	302
LM0945	IC 24C65 SERIAL EEPROM 8X8K	16	IC	504
LM0930	IC STV9379 VERT.DEFL.BOOSTER	15	IC	203
LM0663	IC TL431 VOLTAGE REFERENCE	6	T	503 111
LM0763	IC UC3842 CURRENT MODE PWM CONT.	12	IC	101
LM4017	IC 74HCT02 QUAD 2–INPUT NOR	4	IC	502
LM0931	IC MAS1010 DYN.CONV.CONTROL IC	21	IC	303
LM0937	IC TDA9105 DEFLECTION PROCESSOR	20	IC	201
LM0938	IC ST72E72 MONITOR UC,DDC	34	IC	501
LM0952	IC MONIITOR UC V1.13	24	IC	501 –> vk50
LM4022	IC 74HCT74 DUAL D–FLIP–FLOP	5	IC	503
LM4101	IC 4053B MUX/DEMUX ANAL.3X2–CHAN	7	IC	505
LM4111	IC 4538BT	5	IC	301 401
LM4208	IC 74HC86 2–INPUT EXCL. OR	4	IC	202
LM4406	IC LM324 QUAD OP–AMP	5	IC	304
LZ0063	IC–SOCKET 56–POLE	10	IC	501
QH0065	RELAY PCB–MOUNTING 12V 5A/250V	12	RE	001
QK1095	PIN STRIP 1X02	3	Q	301
QK1285	ROW CONN 1X05	3	Q	102
QK1287	PIN STRIP 1X04	3	Q	401
QK1620	ACCESS.BUS CONN	14	Q	504
QK1531	PIN STRIP 1X08	4	Q	302
QK1587	COOLING & SUPP.PART FOR RESISTOR	1	R	126
QK1650	MAINS CONN MALE	8	Q	101
QM1006	PICOFLEX ASSY BI–IDC 16–POS 550MM	12	Q	502
QM1011	PICOFLEX ASSY BI–IDC 4–POS 300MM	7	Q	503
QM1012	PICOFLEX ASSY BI–IDC 16–POS 150MM	10	Q	608
QT0102	FUSEHOLDER CLIPS 5x20MM R=5,0MM	1	F	101
QT0733	FUSE R=5,0MM T 3,15A 250V IEC127	4	F	102
QT0775	FUSE 5x20MM T 6,3A 250V 1500A	3	F	101
QT0002	SPARK GAP 1,2KV +–500V R=5,0MM	3	GL	302 303
QT0207	GLIMM LAMP 95V 6x12,5MM	4	GL	301
SE2530	POWER SYNC. WIRE	8		
SE2643	VERTICAL. WIRE	6	V	001 002
QM1007	PICOFLEX ASSY BI–IDC 10–POS 500MM	10	Q	501
QA0095	CRYSTAL 8,00 MHZ HC–49/U	4	X	501
UC0859	FASTENING SPRING	2	T	417 418
UC0859	FASTENING SPRING	2	T	419 420 405 406 304 303
UC0859	FASTENING SPRING	2	D	124 125
UC0859	FASTENING SPRING	2	IC	302 106 105
UC1140	HEATSINK	2	IC	106 105 302
UC1140	HEATSINK	2	T	303 304 406 405
UC1140	HEATSINK	2	D	124
UC6551	FASTENING SPRING	3	IC	203
UC6551	FASTENING SPRING	3	D	410 411
UC6552	FASTENING SPRING	3	T	407 105
UC6564	COOLINGPLATE	5	T	105
UC6564	COOLINGPLATE	5	IC	203
UC6664	HEATSINK	14	T	329 328 331 330 335 334 333 332 417 418
UC6664	HEATSINK	14	T	419 420
UC6668	FASTENING SPRING	2	T	329 328 331 330 335 334 333 332
UC6743	SUPPORT	6		
UC6752	WASHER	1		
UC6784	HEATSINK	4		
UC6817	HEATSINK	14	T	407
UC6817	HEATSINK	14	D	410 411
UC6818	SUPPORT	8		
UJ0125	LEAD BAND SST 1 M	1	M	301
UG0403	LEAD BAND	2		
WC0446	HEX PT–SCREW 2,9X8	1		
SE2527	GROUNDING WIRE	6		
SE2652	MAGN.FIELD COMPENS.WIRE	11		
WC0353	PT–SCREW KB 40X10	3	M	301

SMA172F D3100F POWER SUPPLY 100

SMA186F SB5115F

R

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE FUSE ONLY WITH SAME TYPE AND RATING

F101 T6.3A H 250V

PWM A H

HEAT SINK

VERTICAL 200

PVM R

HV 300 GENERATOR

HOR.OUTPUT S-CAPASITORS 400

DYN. 300 CONVERGENSE

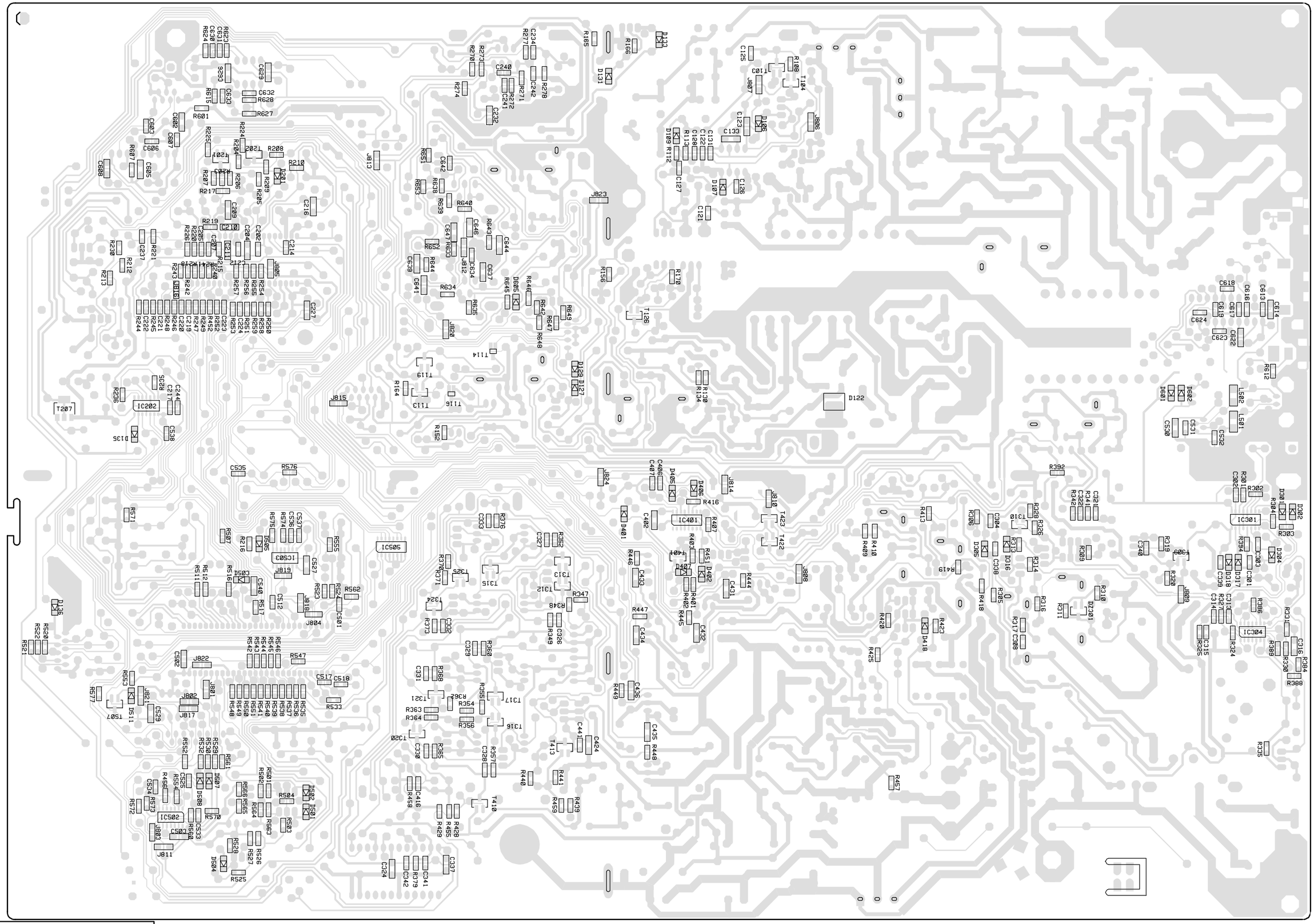
TILT

GND

PCB EDGE

SMA172 1

D3100 06.96 Page 11



Part Number	Description	PG	Item Number

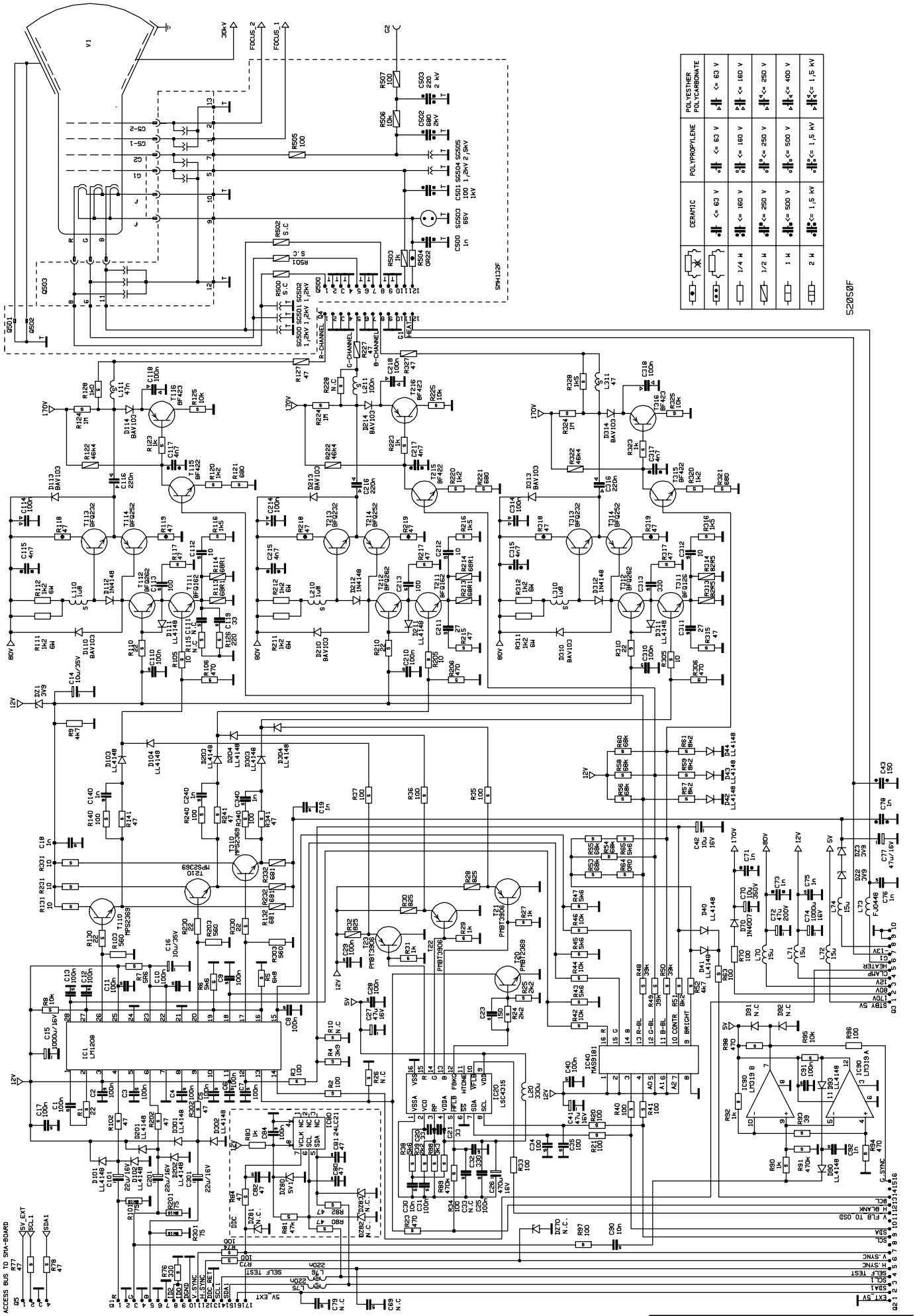
SMY031 VIDEO MODULE (SMH132)

AA0633	R CF 0W25 22R J	1	RY	230									
AA0649	R CF 0W25 100R J	1	RY	033	070	096							
AA0667	R CF 0W25 560R J	1	RY	103	203	303							
AA0673	R CF 0W25 1K0 J	1	RY	083									
AA0689	R CF 0W25 4K7 J	1	RY	009									
AB0641	R NF 0W25 47R J CF	1	RY	118	119	218	219	318	319				
AC4400	R SMD 0W1 0R0 5%	1	JY	064									
AC4419	R SMD 0W1 5R6 5%	1	RY	007									
AC4425	R SMD 0W1 10R 5%	1	RY	305	205	105	131	231	331				
AC4433	R SMD 0W1 22R 5%	1	RY	001	110	210	310	130	330				
AC4439	R SMD 0W1 39R 5%	1	RY	093									
AC4441	R SMD 0W1 47R 5%	1	RY	102	141	117	202	241	217	302	341	317	084
AC4441	R SMD 0W1 47R 5%	1	RY	080	082	077	078	315	215				
AC4449	R SMD 0W1 100R 5%	1	RY	002	003	021	040	041	074	140	240	340	
AC4449	R SMD 0W1 100R 5%	1	RY	020	035	036	037	071	072	073	063		
AC4449	R SMD 0W1 100R 5%	1	RY	097	034								
AC4457	R SMD 0W1 220R 5%	1	RY	126									
AC4461	R SMD 0W1 330R 5%	1	RY	076									
AC4465	R SMD 0W1 470R 5%	1	RY	106	094	206	023	306	098				
AC4469	R SMD 0W1 680R 5%	1	RY	121	221	321							
AC4473	R SMD 0W1 1K0 5%	1	RY	027	029	031	123	223	323	090	092	128	
AC4475	R SMD 0W1 1K2 5%	1	RY	120	220	320							
AC4477	R SMD 0W1 1K5 5%	1	RY	328									
AC4481	R SMD 0W1 2K2 5%	1	RY	024	025	039							
AC4485	R SMD 0W1 3K3 5%	1	RY	088									
AC4487	R SMD 0W1 3K9 5%	1	RY	004									
AC4489	R SMD 0W1 4K7 5%	1	RY	052									
AC4491	R SMD 0W1 5K6 5%	1	RY	043	045	047	006	038					
AC4493	R SMD 0W1 6K8 5%	1	RY	005	065								
AC4495	R SMD 0W1 8K2 5%	1	RY	057	059	061	051						
AC4497	R SMD 0W1 10K 5%	1	RY	008	042	044	046	325	095	125	225		
AC4511	R SMD 0W1 39K 5%	1	RY	048	049	050							
AC4513	R SMD 0W1 47K 5%	1	RY	081	056	058	060						
AC4517	R SMD 0W1 68K 5%	1	RY	053	054	055							
AC4537	R SMD 0W1 470K 5%	1	RY	089	091								
AC4545	R SMD 0W1 1M0 5%	1	RY	124	224	324							
AD0341	R COMP 0W5 47R K	3	RY	127	227	327							
AG1284	R MF 0W16 75R0 1%	1	RY	101	201	301							
AG3281	R MF 0W5 68R1 F	1	RY	113	213	214	114						
AG3289	R MF 0W5 82R5 F	1	RY	313	314								
AG3565	R MF 0W5 46K4 F	1	RY	122	222	322							
AG3381	R MF 0W5 681R F	1	RY	132	232	332							
AG3389	R MF 0W5 825R F	1	RY	032	030	028							
AJ3027	R MO 6W0 1K2 J	2	RY	111	112	211	212	311	312				
CB3135	C CER SMD 27P 50V J	1	CY	311	211								
CB3137	C CER SMD 33P 50V J	1	CY	119	020	021							
CB3141	C CER SMD 47P 50V J	1	CY	080	081	082							
CB3151	C CER SMD 100P 50V J	1	CY	113	213	035	034						
CB3155	C CER SMD 150P 50V J	1	CY	023									
CB3163	C CER SMD 330P 50V J	1	CY	032	313								
CB3175	C CER SMD 1N0 50V J	3	CY	092	076	140	240	340	075	019	018		
CC0110	C CER 150P K 500V	1	CY	043									
CC0200	C CER 1N0 K 500V	1	CY	071	073	078							
CC0110	C CER 150P K 500V	1	CY	043									
CC0530	C CER 4N7 S 500V	1	CY	115	117	215	217	315	317				
CC3480	C CER SMD 10% 100N 25V	2	CY	001	002	003	004	005	006	007	008	009	010
CC3480	C CER SMD 10% 100N 25V	2	CY	011	012	013	025	028	029	040	310	110	210
CC3480	C CER SMD 10% 100N 25V	2	CY	091	084	017	031						
CC3320	C CER SMD 10N 10% 50V	1	CY	030	090								
CK0284	C PES MKT 100N K 250V	2	CY	114	118	214	218	314	318				
CK0343	C PES MKT 220N K 250V	3	CY	116	216	316							
CN0372	C ELYT 22U M 50V	3	CY	101	201	301							
CN0420	C ELYT 47U M 16V	3	CY	027	041	077							
CN2032	C ELYT 10U M 50V	1	CY	014	016	042							
CN2044	C ELYT 10U M 350V	7	CY	070									
CN2469	C ELYT 47U M 200V	6	CY	072									
CN2642	C ELYT 470U M 16V	4	CY	026									
CN2712	C ELYT 1000U M 16V	5	CY	074	015								
FA0010	COIL SMD 100NH 10%	3	LY	211									
FA0012	COIL SMD 220NH 10%	4	LY	075	076								
FA0023	COIL SMD 1U8	4	LY	110	210	310							
FA0027	COIL SMD 47NH 10%	4	LY	311	111								
FJ0448	CHOKE 15UH	2	LY	073									
FJ0505	CHOKE 15UH 5%	2	LY	070	071	072	074						
FJ0705	CHOKE 330UH	2	LY	020									
JF0025	DI 1N4148 75V 200MA	1	DY	112	212	312							
JF0067	DI 1N4007 1000V 1A	1	DY	070									
JF4003	DI BAV103 200V 250MA	7	DY	110	113	114	210	213	214	310	313	314	
JF4005	DI LL4148 75V 150MA	1	DY	040	041	042	043	044	101	102	111	201	202
JF4005	DI LL4148 75V 150MA	1	DY	204	211	301	302	304	311				
JF4005	DI LL4148 75V 150MA	1	DY	103	203	104	303	090	093				
JH0081	ZDI ZPY 3.9 3.9V 1.3W 5%	1	DZY	001	002	003							
JH0087	ZDI BZX83C5V1 5.1V O.5W 5%	1	DZ	080									
JM0205	TR BF423 P 250V 25MA	3	TY	316	216	116							
JM0227	TR MPS2369 N 15V 200MA	3	TY	110	210	310							
JM0244	TR BF422 N 250V 25MA	2	TY	215	115	315							
JM0301	TR BFQ232 N 65V 300MA 1GHZ	11	TY	113	213	313							
JM0302	TR BFQ252 P 65V 300MA 1GHZ	11	TY	114	214	314							
JM0306	TR BFQ162 N 10V 500MA 1GHZ	19	TY	111	211	311							

Part Number	Description	PG	Item Number
JM0307	TR BFQ262 N 65V 400MA 1GHZ	12	TY 112 212 312
JM4116	TR PMBT2369 N 15V 200MA	3	TY 020
JM4117	TR PMBT3906 P 40V 200MA	3	TY 021 022 023
JZ0017	SILICONE INSUL.10X13X0,22	2	TY 113 114 213 214 313 314
LM0476	IC LM319 DUAL COMPARATOR	14	ICY 090
LM0923	IC MAS9181N 8–BIT OCT.DAC	15	ICY 040
LM0925	IC LM1208N VIDEO AMP.3–CH 130MHZ	17	ICY 001
LM0933	IC LSC4315 OSD W/NOKIA CHARACTERS	20	ICY 020
QK1471	ROW CONN 1X16 2,54 180	5	Q 001
LM4418A	IC DUAL MODE 1K EEPROM DDC STM	12	IC 080
QK1707	PICOFLEX HEADER 1X16	4	Q 002
QK1704	PICOFLEX HEADER 1X10	4	Q 003
QK1587	COOLING & SUPP.PART FOR RESISTOR	1	RY 111 112 211 212 311 312
QM1008	PICOFLEX ASSY BI–IDC 12–POS 70MM	9	Q 004
UC3424	FASTENING SPRING	2	TY 112 212 312
UC6647	HEATSINK	9	TY 113 114 213 214 313 314
UC6668	FASTENING SPRING	2	TY 113 114 213 214 313 314
UC6690	HEATSINK	6	TY 112 212 312
UC6816	HEATSINK	17	
UC6752	WASHER	1	
UP0118	CERAMIC HEATSINK ISOLATOR	8	TY 112 212 312

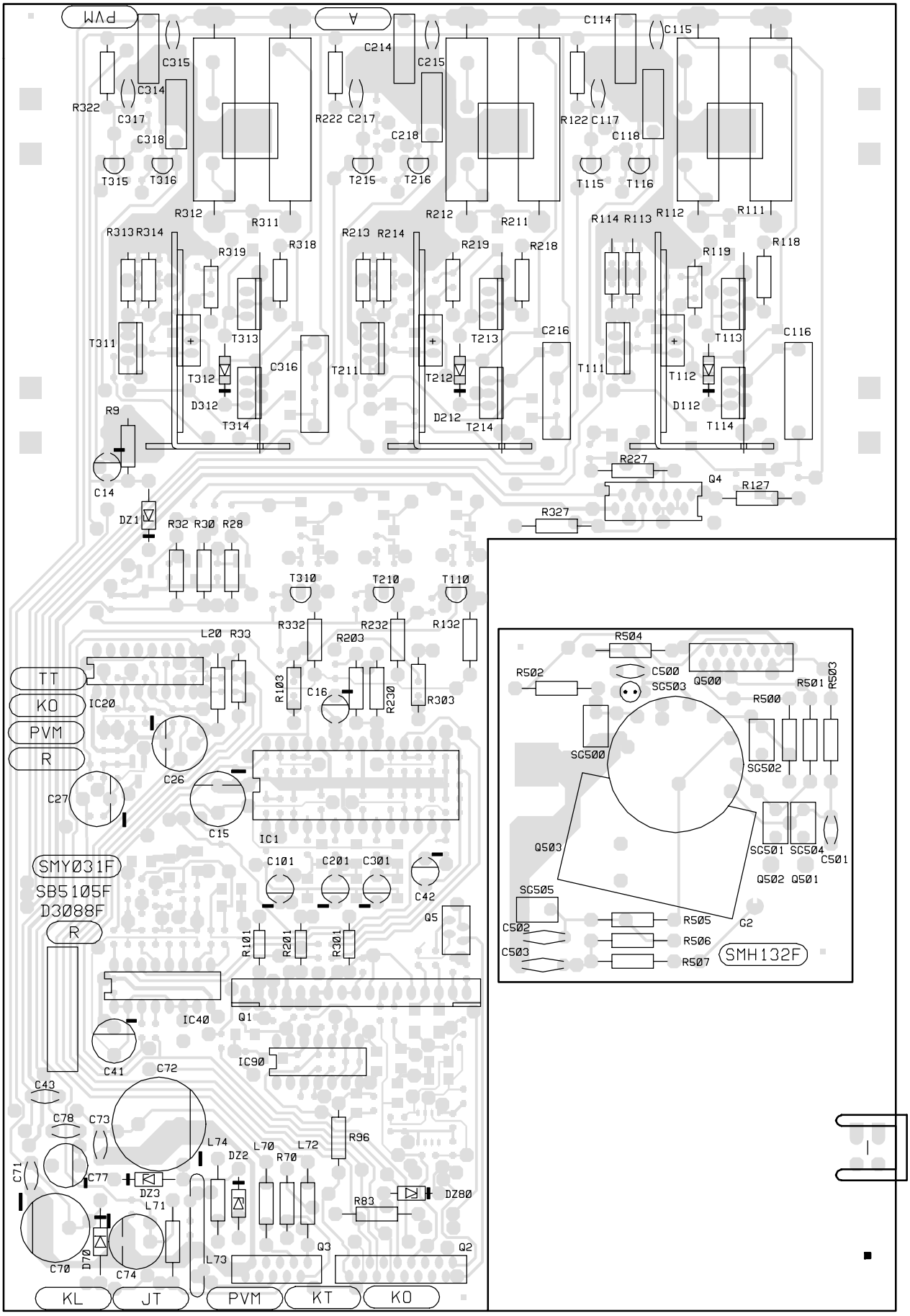
SMH132 CRT–MODULE

AB0585	R NF 0W25 0R22 J CF	1	R 504
AD0349	R COMP 0W5 100R K	1	R 505 507
AD0373	R COMP 0W5 1K0 K	1	R 503
AD0397	R COMP 0W5 10K K	1	RY 506
CA0306	C CER 220P M 2KV	2	C 503
CA0318	C CER 680P M 2KV	2	C 501 502
CC0200	C CER 1N0 K 500V	1	C 500
QK0851	TAP CONN RTM 1,3/5/8.002	1	Q 501 502
QK1603	CRT SOCKET W/DOUBLE FOCUS SNAP–IN	12	Q 503
QT0002	SPARK GAP 1,2KV +–500V R=5,0MM	3	SG 500 501 502 504
QT0004	SPARK GAP 2,5KV +–500V R=5,0MM	5	SG 505
QT0217	GLIMM LAMP 65V	3	SG 503
QK1701	PICOFLEX HEADER 1X04	3	Q 005
QK1705	PICOFLEX HEADER 1X12	4	Q 500
WC0036	HEX PT–SCREW	1	
WC0446	HEX PT–SCREW 2,9X8	1	



	CERAMIC	POLYPROPYLENE	POLYESTHER POLYCARBONATE
	<= 63 V	<= 63 V	<= 63 V
1/4 W	<= 160 V	<= 160 V	<= 160 V
1/2 W	<= 250 V	<= 250 V	<= 250 V
1 W	<= 500 V	<= 500 V	<= 400 V
2 W	<= 1,5 kV	<= 1,5 kV	<= 1,5 kV

S2050F


PVM
A
C315
C314
R322
C317
C318
T315
T316
C214
C215
R222
C217
C218
T215
T216
C114
C115
R122
C117
C118
T115
T116
R312
R311
R212
R211
R114
R113
R112
R111
R313
R314
R319
R318
R213
R214
R219
R218
R119
R118
T311
T313
T312
D312
T314
C316
T211
T213
T212
D212
T214
C216
T111
T113
T112
D112
T114
C116
R9
C14
DZ1
R32
R30
R28
R227
Q4
R127
R327
T310
T210
T110
R332
R232
R132
R203
L20
R33
R103
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R303
TT
KO
IC20
PVM
R
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C27
C15
IC1
SMY031F
SB5105F
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C72
IC90
C43
C78
C73
L74
DZ2
L70
L72
R70
R96
C71
C77
DZ3
L71
R83
DZ80
C70
D70
C74
Q3
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L73
KL
JT
PVM
KT
KO
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R502
C500
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R501
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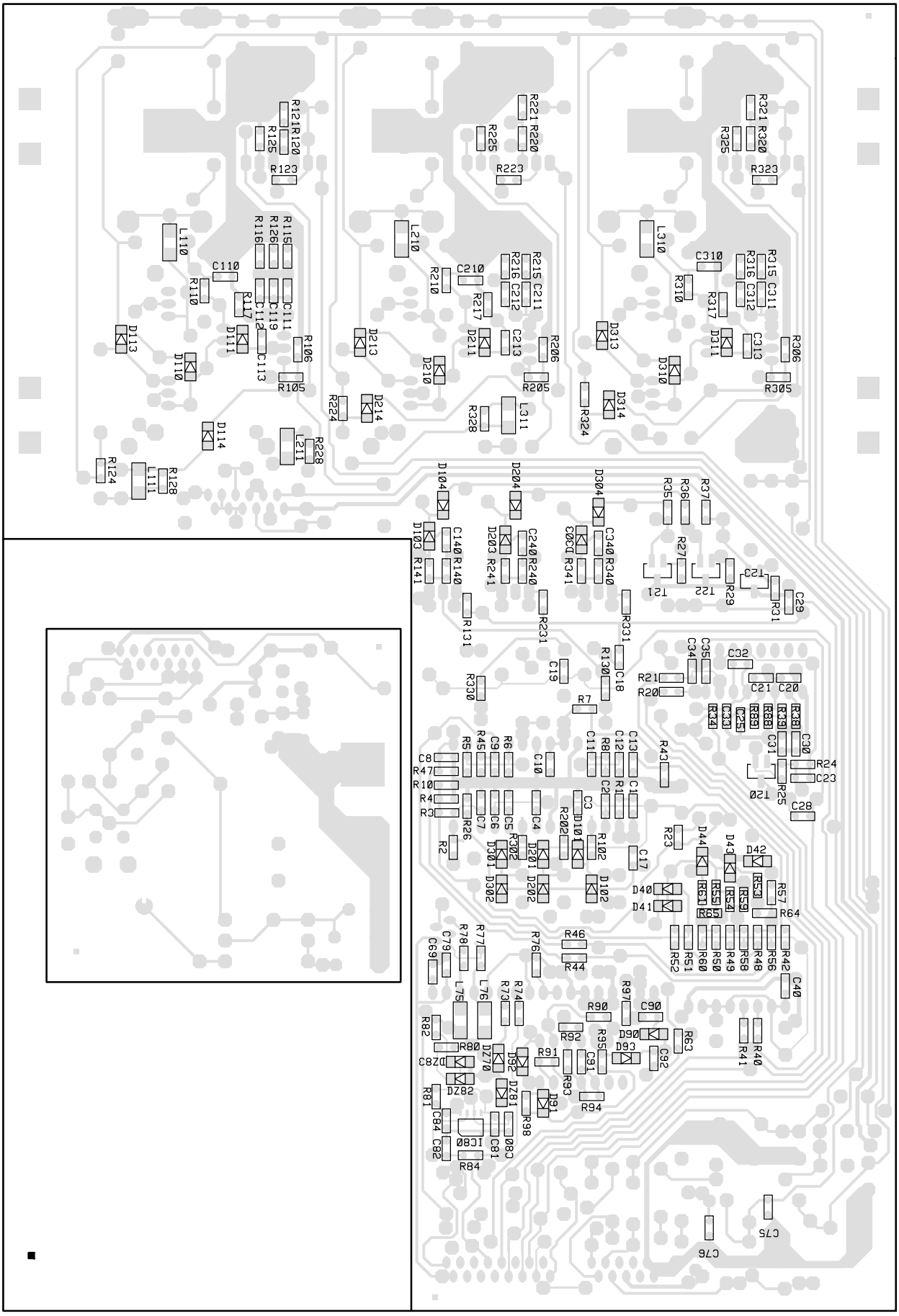
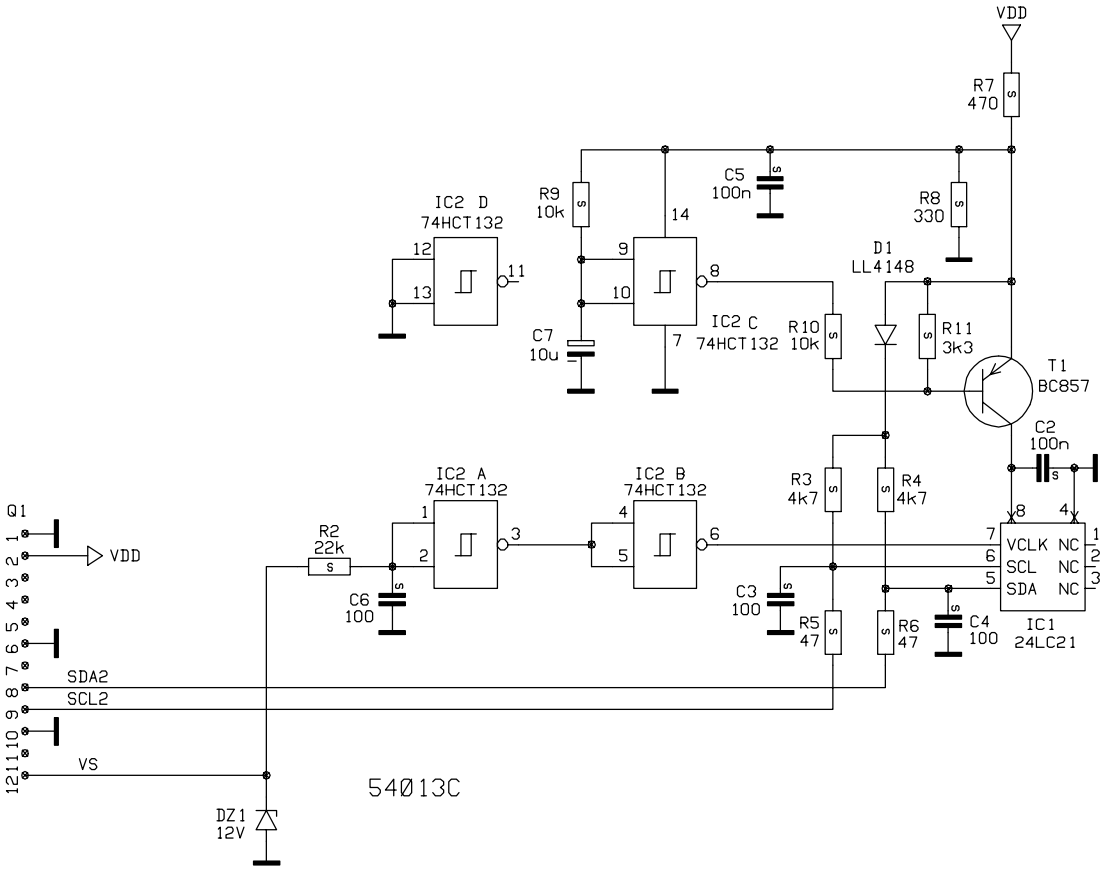
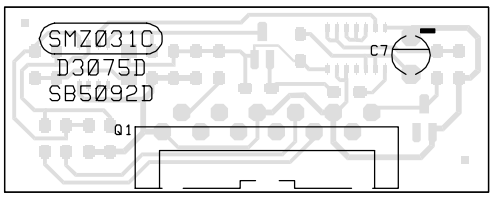
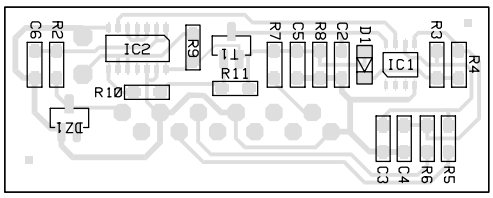
SMH132F

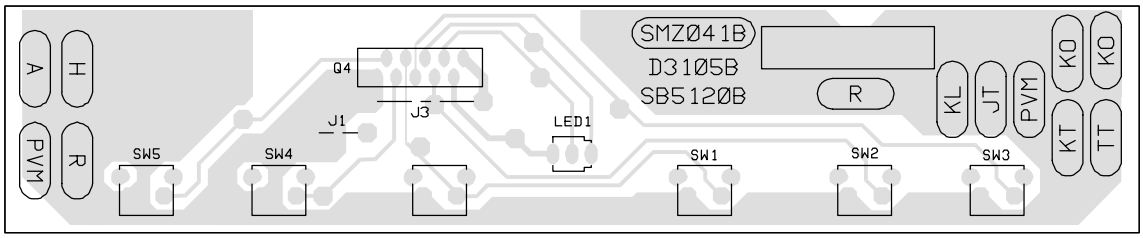


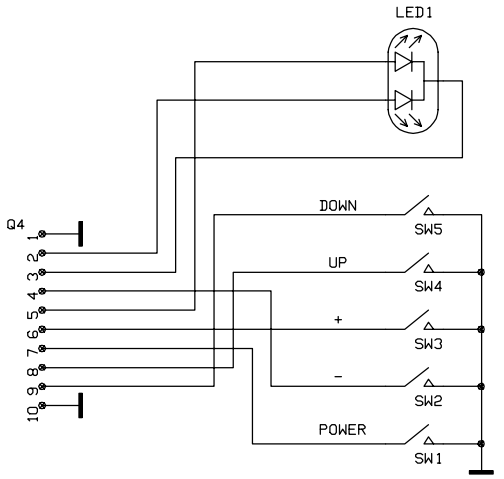
Part Number	Description	Item Number		
AC8641	CHIPRES 0W12 47R J 1206 3216	R	005	006
AC8661	CHIPRES 0W12 330R J 1206 3216	R	008	
AC8865	CHIPRES 0W25 470R J 1206 3216 !	R	007	
AC8685	CHIPRES 0W12 3K3 J	R	011	
AC8689	CHIPRES 0W12 4K7 J 1206 3216	R	003	004
AC8697	CHIPRES 0W12 10K J	R	009	010
AC8705	CHIPRES 0W12 22K J 1206 3216	R	002	
CB4151	CHIPCAP NP0 100P J 50V 1206	C	003	004 006
CC4855	CHIPCAP Y5V 100N Z 50V 1206	C	002	005
CN2032	ELCAP 10U M 50V	C	007	
JF4005	DI LL4148 75V 150MA 4N	D	001	
JM4114	TR BC857B P 45V 100MA	T	001	
LM4213	IC 74HCT132 4*2INPUT NAND SO–14	IC	002	
LM4418	IC DUAL MODE E1K EEPROM FOR DDC	IC	001	
QK1484	MODULE CONN 1X12 2,5 90–DEG	Q	001	





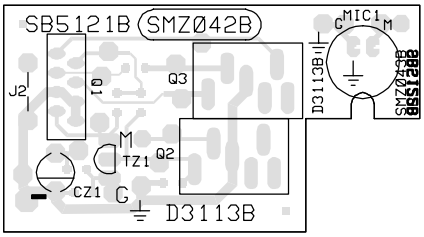






54021B

Part Number	Description	PG	Item Number
QK1704	PICOFLEX HEADER 1X10	4	Q 004
QG0327	PUSH–BUTTON SWITCH 12V 50MA	3	Q 001 002 003 004 005
JL0057	LED DUALCOLOR GREEN/YELLOW 5MM	7	LED 001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SMZ042B
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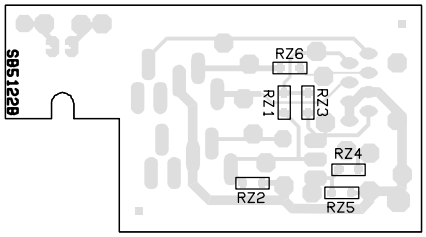
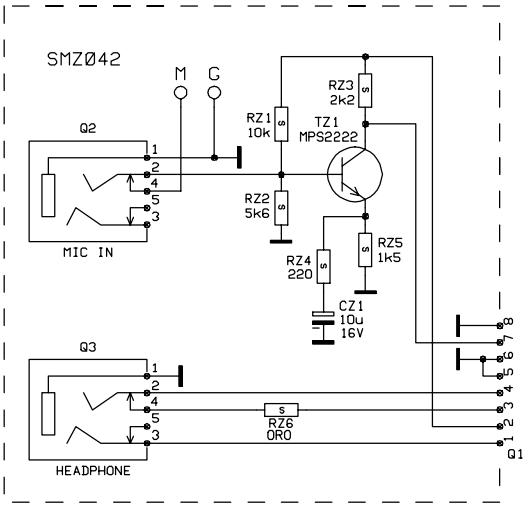
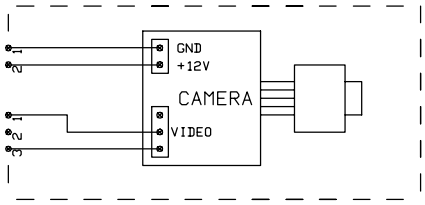
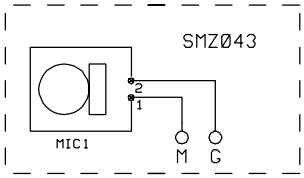
C
M
J2
Q1
Q3
D3113B
M
TZ1
Q2
CZ1
C
D3113B

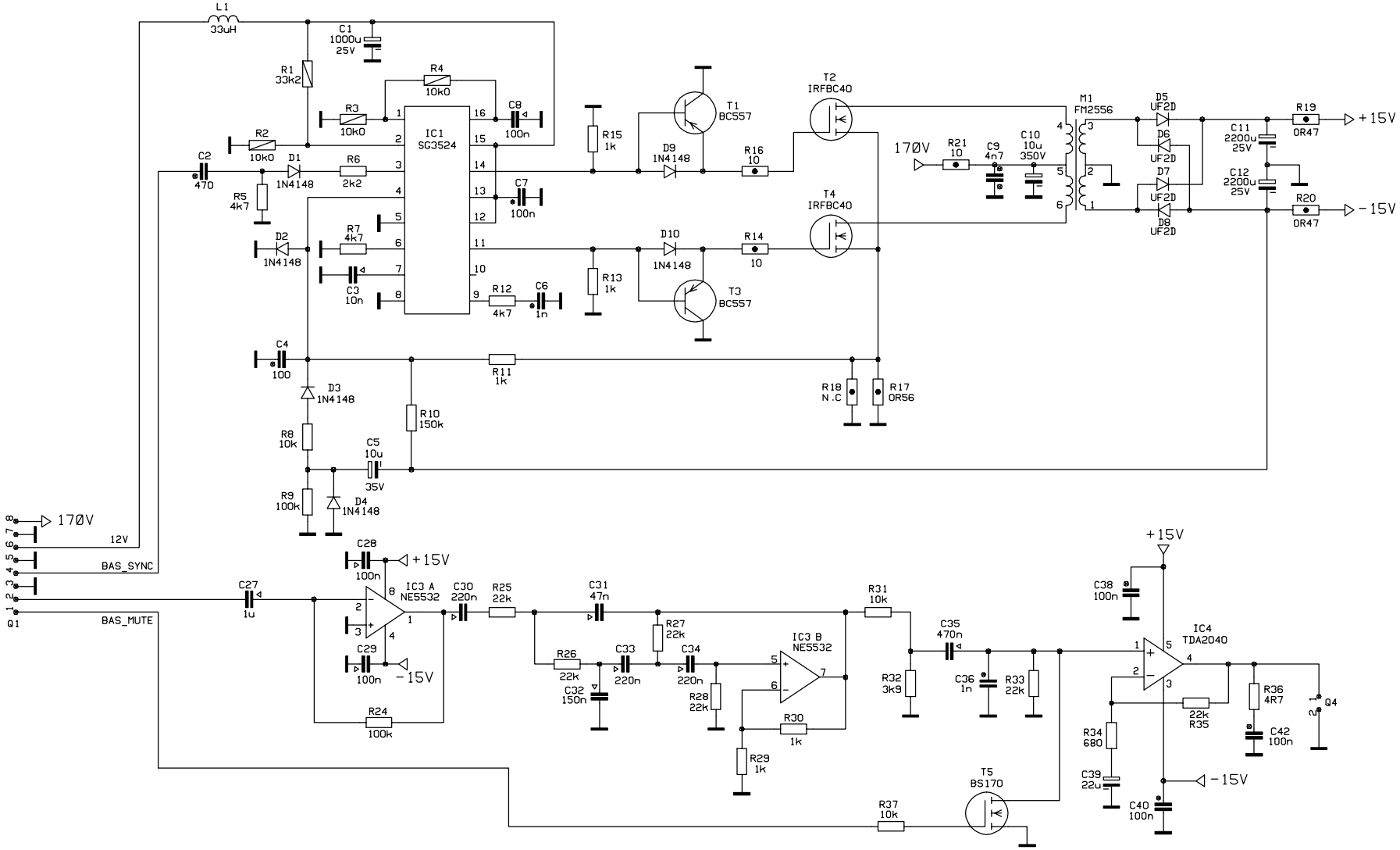

SB5122B
RZ6
RZ1
RZ3
RZ4
RZ2
RZ5


SMZ042
M
G
RZ3
2k2
RZ1
10k
TZ1
MPS2222
Q2
RZ2
5k6
RZ5
1k5
RZ4
220
CZ1
10u
16V
MIC IN
Q3
RZ6
0R0
HEADPHONE
Q1


GND
+12V
CAMERA
VIDEO


SMZ043
MIC1
M
G

54023B



	CERAMIC	POLYPROPYLENE	POLYESTHER POLYCARBONATE
	<= 63 V	<= 63 V	<= 63 V
1/4 W	<= 160 V	<= 160 V	<= 160 V
1/2 W	<= 250 V	<= 250 V	<= 250 V
1 W	<= 500 V	<= 500 V	<= 400 V
2 W	<= 1,5 kV	<= 1,5 kV	<= 1,5 kV

53021B

445P

SMZ044B

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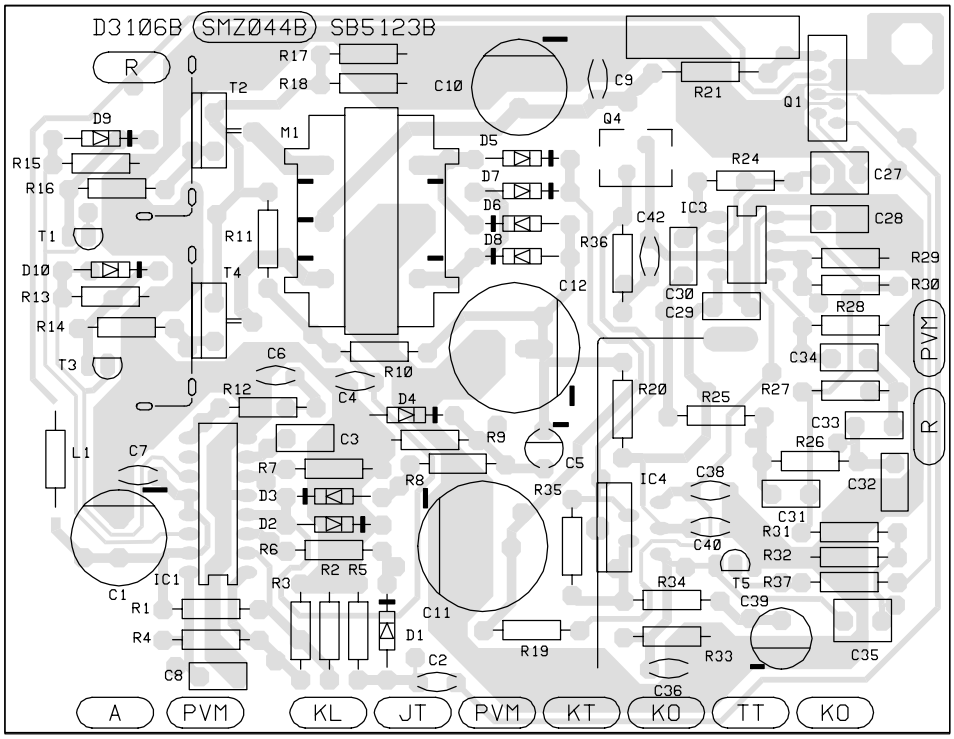
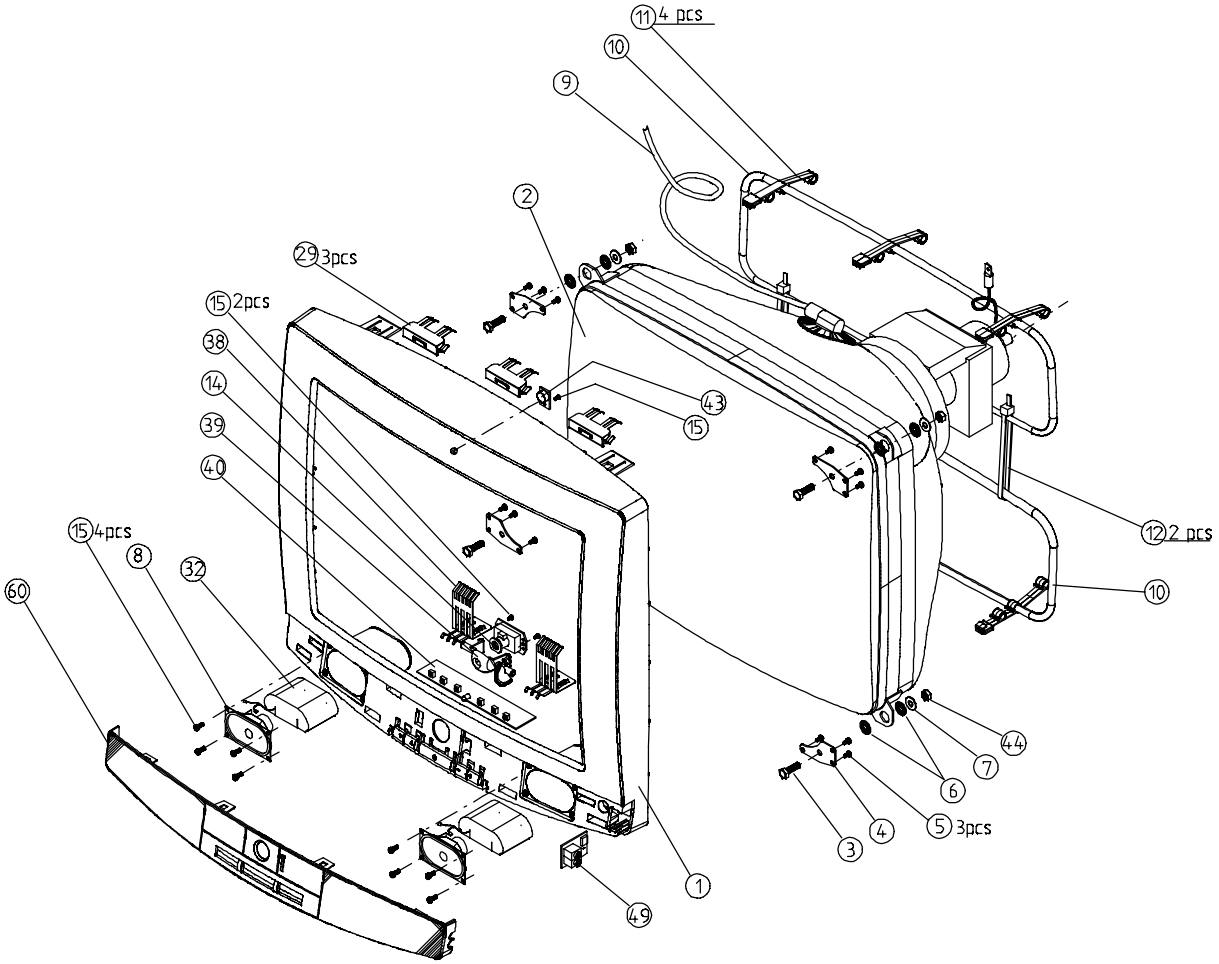
1



Part Number	Description	PG	Item Number
AA0669	R CF 0W25 680R J	1	RZ 034
AA0673	R CF 0W25 1K0 J	1	RZ 011 013 015 029 030
AA0681	R CF 0W25 2K2 J	1	RZ 006
AA0687	R CF 0W25 3K9 J	1	RZ 032
AA0689	R CF 0W25 4K7 J	1	RZ 005 007 012
AA0697	R CF 0W25 10K J	1	RZ 037
AA0705	R CF 0W25 22K J	1	RZ 025 026 027 028 033 035
AA0721	R CF 0W25 100K J	1	RZ 009 024
AA0725	R CF 0W25 150K J	1	RZ 010
AB0593	R NF 0W25 0R47 J CF	1	RZ 020 019
AB0595	R NF 0W25 0R56 J CF	1	RZ 017
AB0617	R NF 0W25 4R7 J CF	1	RZ 036
AB0625	R NF 0W25 10R J CF	1	RZ 014 016
AB0625	R NF 0W25 10R J CF	1	LZ 001
AG3501	R MF 0W5 10K0 F	1	RZ 002 003 004 008 031
AG3551	R MF 0W5 33K2 F	1	RZ 001
CB0673	C CER N150 100P J 50V	1	CZ 004
CC0174	C CER 470P K 50V	1	CZ 002
CC0204	C CER 1N0 K 50V	1	CZ 006 036
CC0530	C CER 4N7 S 500V	1	CZ 009
CC0853	C CER 100N Z 25V	1	CZ 007 038 042 040
CK2304	C PES MKT 4N7 K 63V	3	CZ 031
CK2384	C PES MKT 10N K 63V	2	CZ 003
CK2626	C PES MKT 100N K 63V	2	CZ 028 029 008
CK2664	C PES MKT 150N K 63V	2	CZ 032
CK2704	C PES MKT 220N K 63V	3	CZ 033 034 030
CK2864	C PES MKT 1U0 K 50V	5	CZ 027
CK2784	C PES MKT 470N K 63V	3	CZ 035
CN2032	C ELYT 10U M 50V	1	CZ 005
CN2044	C ELYT 10U M 350V	7	CZ 010
CN2372	C ELYT 22UF M 35V	3	CZ 039
CN2716	C ELYT 1000U M 35V	9	CZ 001 011 012
FJ0429	CHOKE 33UH 10%	4	LZ 001
FM2561	AUDIO TRAFO E30/7	13	MZ 001
JF0025	DI 1N4148 75V 200MA	1	DZ 001 002 003 004 009 010
JF0106	DI UF2D–7000 200V 2A	3	DZ 005 006 007 008
JM0100	TR BC557B P 45V 100A	1	TZ 001 003
JS0026	FET IRFBC40 N 600V 6.0A	10	TZ 002 004
JS1006	FET BS170 N 60V 500MA	10	T 005
JZ0005	ISOLATOR PAD 19*13*0.22MM	1	T 604 605
LM0340	IC TDA2040V AUDIO POWER AMPLIFIER	14	ICZ 004
LM0791	IC SG3524 PULSE WIDTH MODULATOR	7	ICZ 001
LM0941	IC NE5532 LOW–NOISE DUAL OP–AMP	7	ICZ 003
QK1632	ROW CONN 1X02	2	QZ 004
QK1702	PICOFLEX HEADER 1X06	3	QZ 001
UC0859	FASTENING SPRING	2	ICZ 004
UC1142	HEATSINK	3	ICZ 004

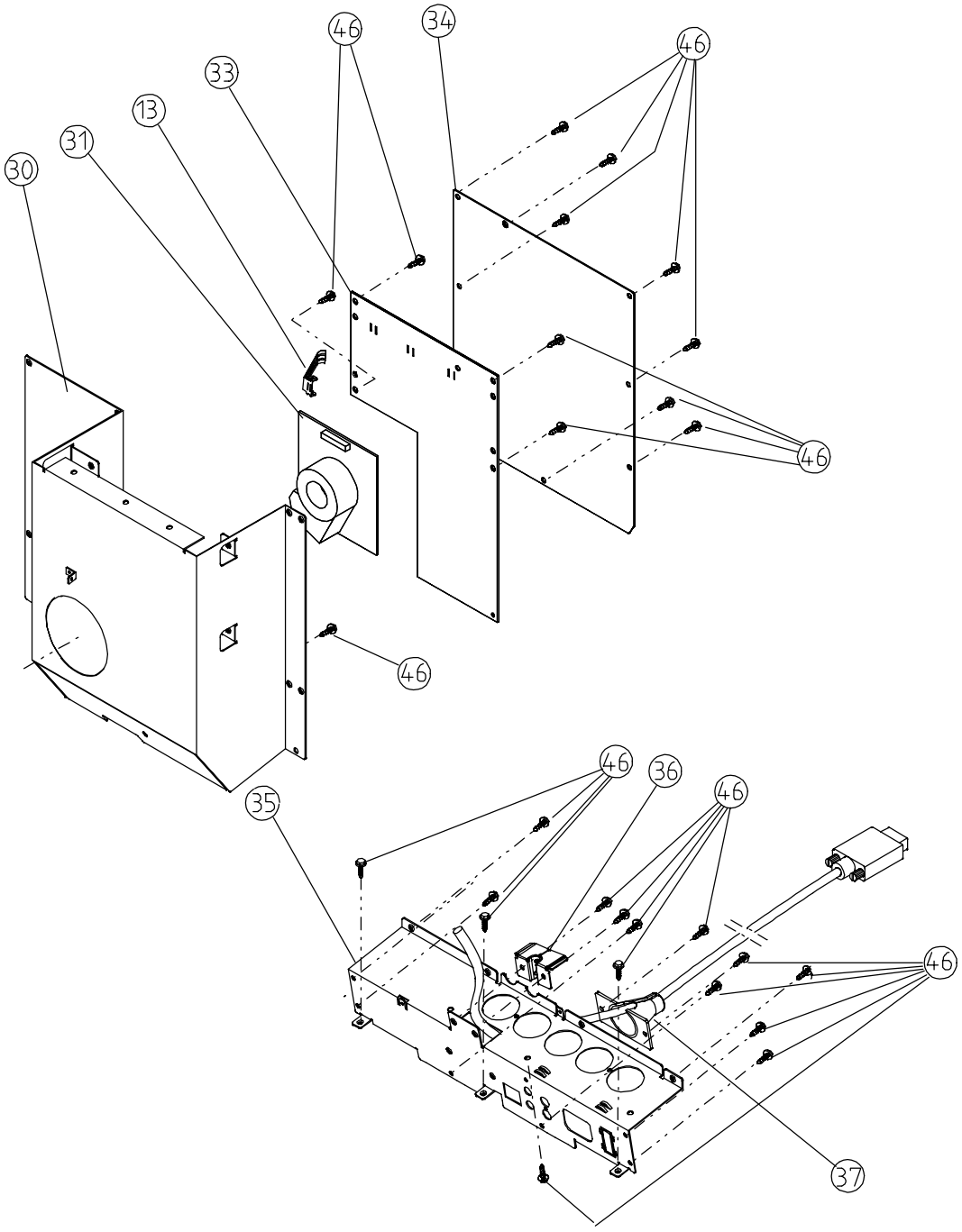
Spare Parts

P/N	Description	Emission	Prod P/N
445Xavc	21 NOKIA FST 102 KHZ CCD−S EUR	TCO	445P051
445Xavc	21 NOKIA FST 102 KHZ CCD−S USA	TCO	445P059
445Xav	21 NOKIA FST 102 KHZ SOUND EUR	TCO	445P151
445Xav	21 NOKIA FST 102 KHZ SOUND USA	TCO	445P159
445Xi	21 NOKIA FST 102 KHZ EUR	TCO	445P251
445Xi	21 NOKIA FST 102 KHZ EUR	MPR	445P252
445Xi	21 NOKIA FST 102 KHZ USA	MPR	445P258
445Xi	21 NOKIA FST 102 KHZ USA	TCO	445P259

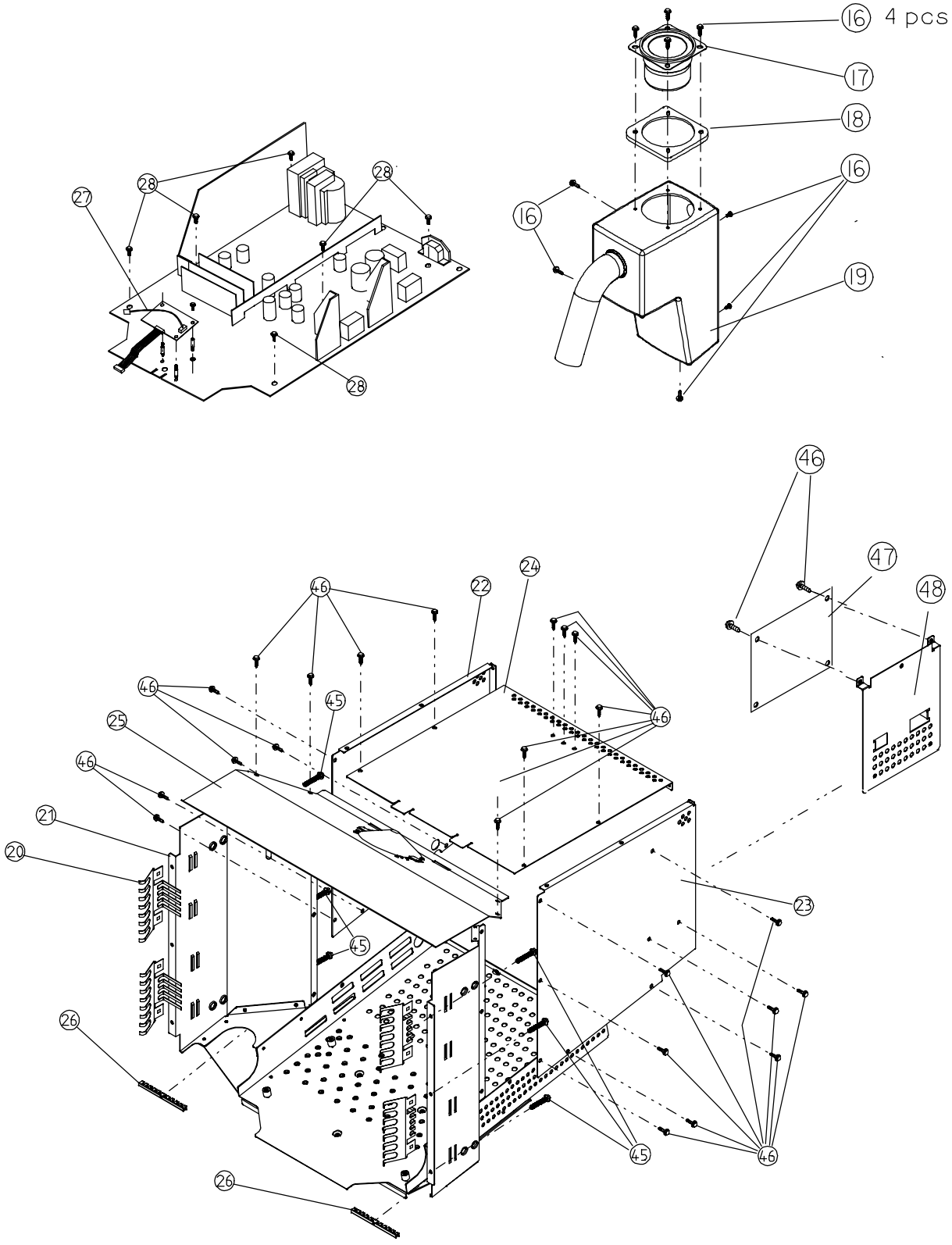


Item no	Decsription	Code	PG	Model
01	Bezel	UM7400	26	251 252 258 259
01	Bezel	UM7560	27	051 059 151 159
02	Picture Tube M51LEQ180X88(U)	NM1004	70	252 258
02	Picture Tube M51LEQ60X88	NM1006A	71	051 059 151 159 251 259
03	Hex screw M6X20	WC0449	01	
04	Clamp	UC6857	06	
05	Pt−screw KB40X8	WC0368	01	
06	Friction plate	UL0128	02	
07	Washer M6X18X1,6	WL0175	01	
08	Loudspeaker 2W 16Ohm 41X71	QP0226	19	051 059 151 159
10	Demagn.coil 21	FD0216	25	
11	Demagn.coil holder	UG0786	02	
12	Lead band SST 1 M	UJ0125	01	
12	Lead band PLT 2 S panduit	UJ0211	02	
14	CCD camera unit CCB−GL5P−N	NC0100	61	051
14	CCD camera unit CCB−GL5−N	NC0101	60	059
15	Pt−screw KB30X6	WC0350	01	051 059 151 159
29	Grounding spring upper	UC6851	04	
32	Damper	UA1308	05	051 059 151 159
38	Grounding spring	UC6856	08	

Item no	Decsription	Code	PG	Model
39	Adjuster	UA5768	06	051 059
40	Control module	SMZ041	18	
43	Microphone	QP0001	07	051 059 151 159
44	Nut M6 nylok	WJ0171	01	
49	Connector module	SMZ042	18	051 059 151 159
60	Control panel	UA7330A	16	251 259
60	Control panel	UA7330B	16	252 258
60	Control panel	UA7350A	16	151 159
60	Control panel	UA7370A	16	051 059
	Grounding plate	UC6903	03	1197 –>
	Grounding spring	UC6898	03	1197 –>
	Screw	WC0036	01	1197 –>



Item no	Decsription	Code	PG	Model
13	Grounding spring	UC6850	04	
30	Video box	UC6820	22	
31	Crt—module	SMH132	28	
33	Video amplifier	SMY031	50	
34	Back plate	UC6822	12	
35	Connector panel	UC6821	16	
36	Strain relief	UC6801	09	
37	Signal cabel support	UG0796	03	
46	Hex plate screw	WC0036	01	


16 4 pcs
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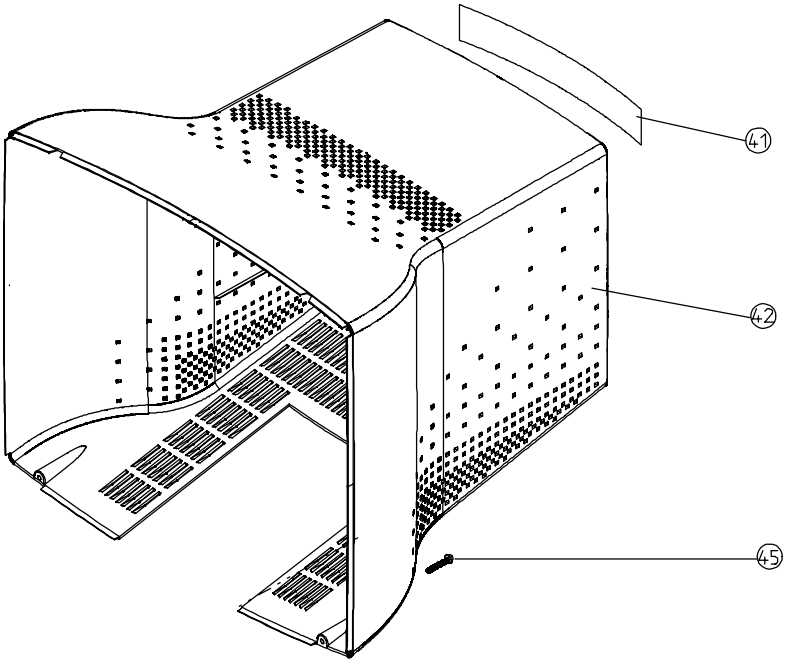
Item no	Decsription	Code	PG	Model
16	Pt−screw KB 40X10	WC0353	03	051 059 151 159
17	Woofer	QP0230	21	051 059 151 159
18	Gasket 80X80	UL0130	06	059 159
19	Woofer box	UG0719	23	051 059 151 159
20	Grounding spring, side	UC6709	05	
21	Frame assy	UC6827	33	
22	Side plate, left	UC6825	17	
23	Side plate, right	UC6824	17	
24	Cover	UC6826	17	
25	Support (upper)	UC6832	15	
26	Insulator	UG0812	04	
27	Main board	SMA172	60	251 252 258 259
27	Main board audio	SMA172AUD	60	051 059 151 159
28	M4X8 8.8	WA0749	01	
45	Pt−screw KB 40X20	WC0354	01	
46	Hex plate screw	WC0036	01	
47	Sub woofer module	SMZ044	34	051 059 151 159
48	Fixing plate	UC6852	06	051 059 151 159
	Firmware V1.15	LM0938	34	051 059 151 159 251 252 258 259
	Firmware V1.13	LM0952	24	251 252 258 259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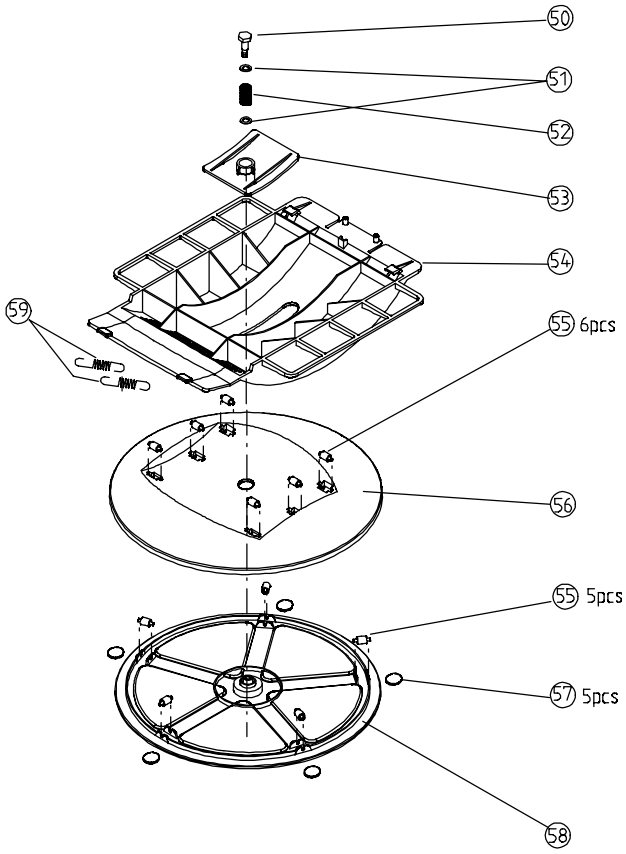
50
51
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55 6pcs
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55 5pcs
57 5pcs
58

Item no	Decsription	Code	PG	Model
41	Type label 445P	ZZ2755	12	
42	Rear cover	UD0431	32	
45	Pt−screw KB 40X20	WC0354	01	
50	Screw	WA0736	06	
51	Washer	WL0163	02	
52	Spring 1,5 mm	UC6800	01	
53	Sliding piece	UG0792	08	
54	Swivel	US0054	20	
55	Sliding bearing	UC6802	04	
56	Bottom cover	US0008	17	
57	Foot button	UL0091	02	
58	Bottom plate	US0007	17	
59	Picture tube grounding spring	UC3016	04	
	Badge−Nokia 51mm	UA1243	08	
	Washer	UC6781	04	
	Cover	UC6866	14	051
	Inteference shield	UC6867	12	051
	Stand assy	UDX047	30	
	Insulator	UG0694	05	051
	Lead band 11x20mm	UG0770	03	151 159
	Insulator	UG0795	08	
	Hex pt−screw	WC0036	01	051 059 151 159
	Pt−screw KB 40X10	WC0353	03	004
	Pt−screw KB 40X20	WC0354	01	151 159
	Pt−screw K70X30	WC0447	03	
	Washer 4,3	WL0217	01	
	Connector label base model	ZZ2734	13	251 252 258 259
	Connector label Audio	ZZ2756	15	151 159
	Connector label Audio/Camera	ZZ2757	12	051 059
	Connector label 2	ZZ2793	08	051 059 151 159 251 252 258 259 0197 −>

Item no	Decsription	Code	PG	Model
Cables:				
	Mains Cable 3x1,0mm^2 L=2,5m grey	QM0028	18	051 151 251 252
	Mains Cable 3x18AWG L=1,8m	QM0049	18	059 159 258 259
	CY−cable 21” 8−wire	QM0154	12	
	Signal cable VGA−42	QM0291	30	
	Grounding wire	SE2651	06	
	Grounding wire	SE2653	06	
	Grounding wire pictur tube.−frame	SE2654	06	
	Groundin braid	SE2664	08	
	Loudspeaker wire	SE2665	08	051 059 151 159
Packing materials:				
	Bottom support	ZA1876	28	
	Top support	ZA1877	22	
	Packing box 21	ZA2525	16	059 159 259
	Packing box 21	ZA2528	16	051 151 251 252
Documents:				
	Users guide Nokia ENFRSP	ZF4520	09	051 059 151 159 251 252 258 259
	Users guide Nokia GEITSWFI	ZF4521	11	051 151 251 252
	Nokia monitor setup Win95	ZK0003	08	−>96497
	Nokia monitor setup Win95	ZK0004	08	96501−>
	Nokia monitor setup Win95	ZK0005	08	97291−>